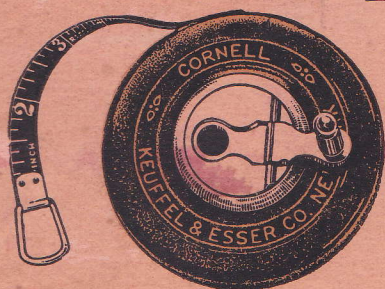


Trade Catalogue of
**MEASURING
TAPES**
and Hardware Specialties



Manufactured by
KEUFFEL & ESSER CO.
NEW YORK

1926

KEUFFEL & ESSER CO., NEW YORK

Trade Catalogue of MEASURING TAPES and Hardware Specialties



1926.

9TH EDITION

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KEUFFEL & ESSER CO.

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For list prices pertaining to this catalogue see Price List of Measuring Tapes and Hardware Specialties, supplemental to the Trade Catalogue of Measuring Tapes and Hardware Specialties.

KEUFFEL & ESSER CO. NEW YORK

K & E MEASURING TAPES.

Patented.

Manufactured by

KEUFFEL & ESSER CO.

These American-made tapes are recommended for their superiority in *design, material, workmanship, and accuracy.* They are graduated according to the U. S. Standard of the National Bureau of Standards at Washington, D. C.

Our Steel Tapes in feet are standard at 68° F; those in metric measure at 20°C.

KECO FINISH.

By this name we designate the superior finish which we put on all our steel tape lines. It produces a dense, even, black background with bright steel graduations and figures of exceptional legibility. The **KECO** finish wears well, guards against rusting, tends to preserve the appearance of the line and obviates the necessity of greasing to protect it.

For description of "Ready Reading" Graduations, see page 4.

SUBDIVISIONS.

U. S. STANDARD.

Steel Tapes in 12ths have the foot graduated to inches ($\frac{1}{12}$ foot) and each inch to eighths, making the ultimate graduation $\frac{1}{8}$ inch, except the Lilliput, Midget, Dwarf and Mechanic's Tapes, which are graduated to $\frac{1}{16}$ inch.

Steel Tapes in 10ths have the foot graduated into 10 parts and each $\frac{1}{10}$ again into 10 parts, making the ultimate graduation $\frac{1}{100}$ foot.

Woven Tapes in 12ths have the foot graduated to inches ($\frac{1}{12}$ foot) and the inches to halves, making the ultimate graduation half inch, except the Piccolo Tape, which is graduated to $\frac{1}{4}$ inch.

Woven Tapes in 10ths have the foot graduated into 10 parts and each $\frac{1}{10}$ into halves, making the ultimate graduation half tenths of a foot, except the Piccolo Tape, which is graduated to $\frac{1}{10}$ and $\frac{1}{100}$ foot.

Spring Winding Pocket Tapes: **Tip Top Tapes** are graduated to inches in 16ths, except Nos. 7713 TF, 7714 TF, 7714 TFM and 7723 TF, which are graduated to feet, inches and 16ths, Nos. 7711-4 and -8 which are graduated to inches and 16ths, other side to scale of $\frac{1}{4}$ in. or $\frac{1}{8}$ in. to the foot respectively and No. 7711 A which is graduated to the scale of $\frac{1}{4}$ in. to the foot on one side and $\frac{1}{8}$ in. to the foot on the other.

Spring Winding Pocket Tapes: **Tip Top Tapes** Nos. 7710 D to 7714 D, in 10ths have the foot graduated into 10 parts and each $\frac{1}{10}$ again into 10 parts, making the ultimate graduation $\frac{1}{100}$ foot.

Steel Tapes on which the measurement begins "on the line" have the zero mark $\frac{1}{2}$ or $\frac{1}{10}$ foot respectively from the end of the line.

METRIC.

Steel Tapes in Metric measure are graduated to half centimeters, the first decimeter to millimeters.

Woven Tapes in Metric measure are graduated to half centimeters throughout.

Spring Winding Pocket Tapes in Metric Measure are graduated to millimeters throughout.

On all tapes in the METRIC measure except Paine's pattern tapes, the measurement begins "on the line."

SELF OPENING HANDLE.

The "Handy" "Home" "Midget" "Armor" "Illinois" and "Dwarf" Steel Tapes and the "Piccolo" Woven Tapes have handles which are opened by pressure on a small pin in the back of the center. The handles of the "Cornell" "Rensselaer" and "Lilliput" Steel Tapes and the "Harvard" Woven Tapes are opened by direct pressure on the end of the grip.

KEUFFEL & ESSER CO., NEW YORK

K & E

“READY READING” TAPES

Prevent Errors and Save Time.

The foot numbers, which are repeated at every sub number, are placed at right angles to the sub numbers and are read *across* the tape instead of lengthwise. This arrangement facilitates reading and thus prevents errors and saves time. In making horizontal measurements greater than five feet, the tape user is “behind” his tape, so that this lateral position of the foot numbers is the most natural and convenient, for both horizontal and vertical measuring, as shown in the cuts below. Furthermore, it is much less confusing than where all numbers (foot and inch or tenth alike) are positioned longitudinally on the tape; in which case, foot numbers and sub numbers, being often duplicated, are frequently mistaken for each other.

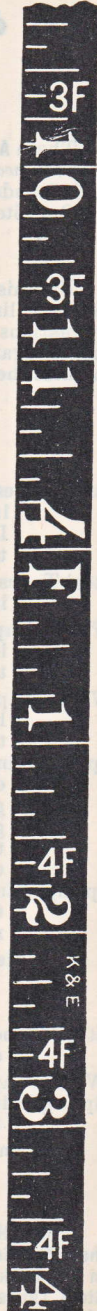
The foot number *is repeated at every inch mark or tenth mark*, directly ahead of the sub number, throughout the entire length of the tape. This absolutely prevents mistakes in reading the tape, since there can never be the slightest doubt as to the number of feet measured at any point on the tape.

The great advantages of this system of numbering are instantly obvious to any one who uses a tape, and will be fully appreciated because almost everyone has made mistakes of a foot in measuring with tapes numbered in the ordinary way, with the foot figures appearing only once every twelve inches. Such mistakes are always troublesome, frequently costly and sometimes dangerous.

Much time is also saved by this system of numbering, as one need not look back to the beginning of the foot to see the foot

number; on the contrary, it is constantly in front of the eye in close juxtaposition to every sub number.

K & E Steel and Woven Tapes, Nos. 7121 to 7515 and Nos. 7890 to 7895 are now furnished with “Ready Reading” Graduations.



KEUFFEL & ESSER CO., NEW YORK

K & E FRICTION BRAKE.

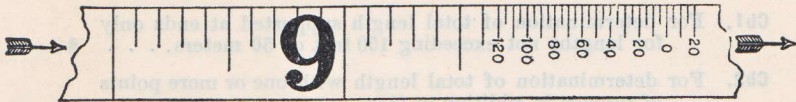
Pat. July 22, 1924.

The patented K & E Friction Brake is applied to all K & E Steel Tapes in cases (except the Tip Top).

This device, which is extremely simple and durable, maintains friction between the drum and the bearings in which it turns with just sufficient pressure to prevent the drum from rotating under the spring of the tape alone.

By this means both "back lash" and binding of the line within the case are eliminated; "back spinning" of the handle is prevented; time in operation is saved; and the life of the tape considerably prolonged.

K & E STEEL TAPES WITH THERMOMETER SCALE.



Ending of 100 foot tape with Thermometer Scale. Actual size.

F. S. Patent Thermometer Scale on 50 or 100 foot tape, . . . extra \$

As a means of obtaining additional accuracy and uniformity in measuring, we recommend steel tapes with thermometer scale. This scale is graduated to correspond to the contraction and expansion of the tape, according to the Fahrenheit thermometer for tapes graduated in feet, or the Centigrade thermometer for tapes in metric measure. It takes the place of the terminal mark of the tape and the terminal point lies at that mark of the thermometer scale which corresponds to the prevailing temperature reading at the time of taking the measurement. For instance, when the temperature registers 80°, the terminal point will be at the graduation numbered 80 on the thermometer scale; at 20° it will be at the graduation numbered 20, etc., etc. The above cut, which is actual size, will show how important it is for exact measuring to make this correction for temperature, as the variation in 100 feet between 90° above and 20° below zero is about .07 feet. (The fig. "9" in the cut is the 9th tenth of the last foot of a 100 foot tape.)

This scale cannot be applied to Liliput, Midget, Dwarf, Handy, Home, Armor nor Bronze Tapes nor to tapes less than one-quarter inch wide, the latter exception including the Flat Wire Tapes and Band Chains listed on pages 38 to 51 inclusive.

K & E STEEL TAPES WITH STATED TENSION.

T. E. Determining the tension and etching it on the line, for tapes up to 100 ft. extra \$

To secure uniformity in measurements, we etch on any of our steel tapes (except Liliput, Midget, Dwarf, Handy, Home, Bronze and Armor) the tension (in pounds, to the nearest halfpound) at which the tape is standard at 68° F. when supported for its entire length, and also when supported at its ends only.

For determining the tension of longer lines and etching on the line, prices will be according to conditions and will be quoted on application.

KEUFFEL & ESSER CO., NEW YORK

OFFICIAL CERTIFICATE OF COMPARISON.

We can furnish a Certificate of Comparison by the National Bureau of Standards at Washington for any of the **K & E** Steel Tapes, the graduations of which **begin on the line**. The Bureau is not prepared to test tapes supported at points more than 150 feet or 50 meters apart; nor can it test a tape at any point which is not a point at which the tape is supported.

NOTE: Any of our steel tapes are furnished, upon order, with graduations beginning on the line, without extra charge. The Bureau of Standards Certificate is given only to tapes with graduations beginning on the line, where these graduations are etched on the line. All other tapes are eligible for a Report from the Bureau, the Report giving the data usually furnished in a Certificate, but without the official Certification.

The following prices for comparing are those charged by the Bureau; and **do not include** the transportation charges to and from Washington, which are extra.

- Ca.** Standardization of tapes; i. e., determination of total length when supported throughout and at standard tension; for each 150 feet or 50 meters or fraction thereof

NOTE: The standardizing test (Ca) is required by the Bureau of Standards; and it must be made prior to any other test which may be requested. This is the regular standard test which the Bureau makes unless specifically requested to make any of the additional ones listed below. Hence, the charge or any of the following tests must be added to the charge for test (Ca).

- Cb.** Each determination of total length in addition to the above, for each 150 feet or 50 meters or fraction thereof, as follows:—

Cb1. For determination of total length supported at ends only for lengths not exceeding 150 feet or 50 meters. \$

Cb2. For determination of total length with one or more points of support in addition to (1)

Cb3. For determination of the tension to that nearest 0.5 pound or 0.25 kilogram at which the tape is most nearly correct.

Cb4. For determination of total length at any specified tension other than the standard or that under (3)

Cb5. For determination of total length at any temperature other than 68° F. (20° C.)

Cb6. For determination of total length of extra graduation when tape is graduated on both sides

- Cc.** Determination of the length of a subinterval under the same conditions as to tension and method of support as for the total length being compared

- Cd.** Determination of Young's modulus of elasticity for each 150 ft. or 50 meter interval

- Ce.** Determination of the weight of tape per foot or per meter . . .

- Cf.** For testing spring balances accompanying tapes.

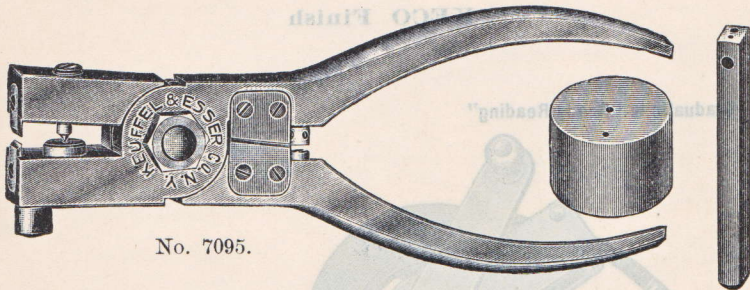
- Cg.** For graduating tapes, each line (this fee does not include the testing of the tape)

- Ch.** For tapes sent not on a reel; for each 150 ft. or 50 meter length, or fraction thereof.

- Co.** For placing an identification number on any tape not already bearing an identification number



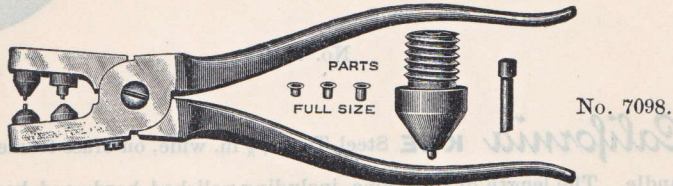
TAPE MENDING OUTFIT.



No. 7095.

- 7095. K & E** Tape Mending Outfit, one punching pliers with end nipper, shears and hammer, all combined in one tool. One extra punch for pliers. One rivet set, one small anvil. One box of rivet pins. One clamp, several pieces of $\frac{3}{8}$ in. tape steel; in canvas bag, each \$

TAPE MENDING TOOL.



- 7098 Tape Mending Tool**, combined cutter and riveter, 8 in., a light and convenient tool for quickly repairing tapes in the field. Tool, with 1000 eyelets (500 each of two sizes) each \$
Extra eyelets (500 in a package) per mille

REPAIRING TAPES.

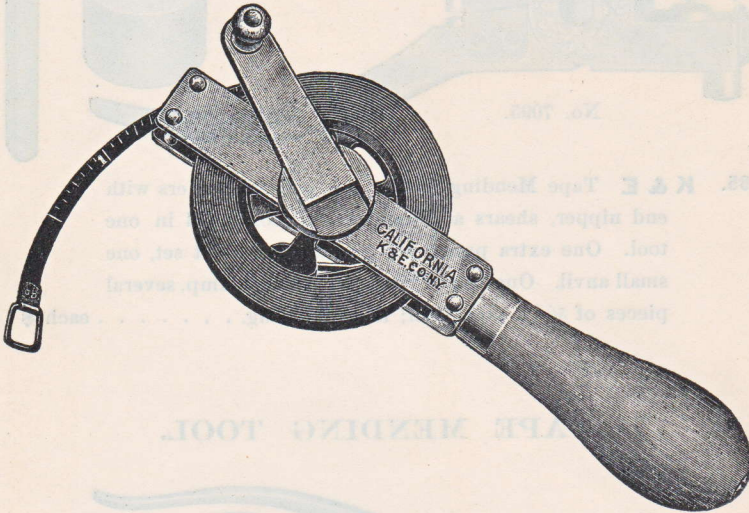
We promptly attend to any repairs on steel or woven tapes at a moderate charge, either at our General Office, Hoboken, N. J., or at our Branch Houses in New York, Chicago, St. Louis, San Francisco and Montreal.



K & E STEEL TAPES

KECO Finish

Graduations "Ready Reading"



No. 7121 T.

California **K&E** Steel Tapes, $\frac{3}{8}$ in. wide, on brass frame with lock handle. The length of the frame, including polished hardwood handle $3\frac{1}{2}$ in. long, is $7\frac{1}{4}$ in. The frame and all mountings are nickelplated. The tape runs freely on the reel and can be held in any position, by one simple movement of the lock handle which is attached to the metal frame of the tape. The decided gain in mechanical advantage which results from using the long lock handle, enables winding of the tape to be performed with little effort.

Graduations begin on the line.

	Length in feet	33	50
12ths of feet	No. 7121 T	7122 T	
10ths " "	7121 D	7122 D	
	each \$		

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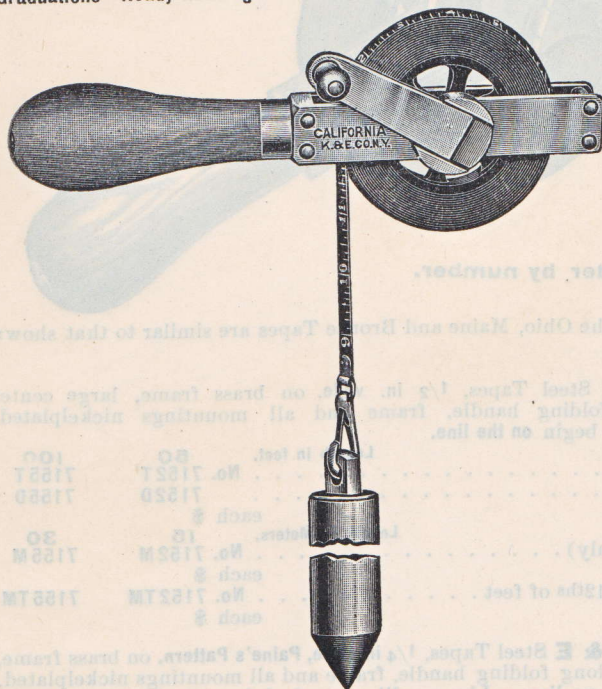
K & E STEEL TAPES

REG. U. S. PAT. OFF.

KECO Finish

FOR OIL GAUGERS' USE

Graduations "Ready Reading"



No. 7142 T.



Plumb bob for
7132 T.

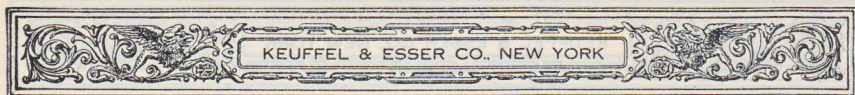
California K & E Steel Tapes for oil gaugers' use. They are similar in construction to 7121 and 7122 T or D but are provided with a heavy steel plumb bob which, when in use, is suspended from a strong hook attached to the tape. Graduated in feet, inches and eighths (12ths of feet).

7131 T and **7132 T** carry a nickelplated plumb bob $\frac{3}{4}$ in. in diameter, $2\frac{5}{8}$ in. long which weighs 6 ozs. Length of connecting link plus length of bob equal to length of bob of 7141 T or 7142 T. These plumb bobs are therefore interchangeable. They are cylindrical for $1\frac{1}{8}$ in. of their length and then taper to a point. These tapes are used in gauging oils of low specific gravity.

7141 T and **7142 T** carry a plumb bob $\frac{3}{4}$ in. in diameter, $6\frac{1}{2}$ in. long which weighs 16 ozs. They are cylindrical for a length of $5\frac{1}{2}$ in. and then taper to a point. These tapes are used in gauging oils of high specific gravity.

Measurements are from point of plumb bob.

	Length In feet	33	50
12ths of feet	No. 7131 T	7132 T
		each \$	
12ths of feet	No. 7141 T	7142 T
		each \$	

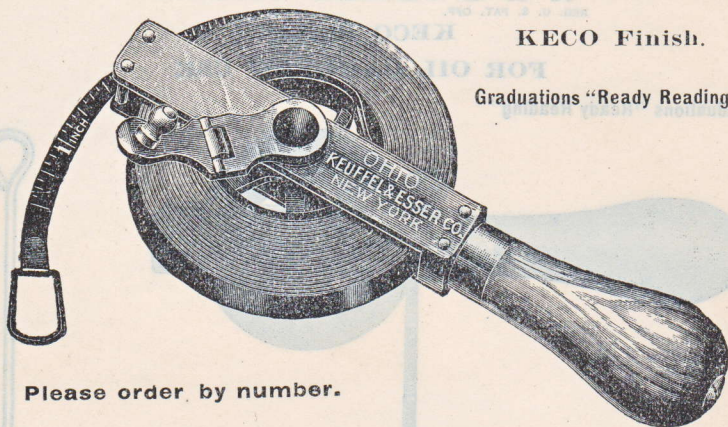


K & E STEEL TAPES.

REG. U. S. PAT. OFF.

KECO Finish.

Graduations "Ready Reading".



Please order by number.

The reels of the Ohio, Maine and Bronze Tapes are similar to that shown in the above cut.

Ohio K & E Steel Tapes, 1/2 in. wide, on brass frame, large center with long folding handle, frame and all mountings nickelplated. Graduations begin on the line.

Graduations begin on the line.		Length in feet,	50	100
12ths of feet	No.	7152 T		7155 T
10ths " "		7152 D		7155 D
		each \$		
		Length in Meters,	15	30
Metric (one side only)	No.	7152 M		7155 M
		each \$		
Metric, other side 12ths of feet	No.	7152 TM		7155 TM
		each \$		

Maine K & E Steel Tapes, 1/4 in. wide, Paine's Pattern, on brass frame, large center with long folding handle, frame and all mountings nickelplated, two handles for tape line. Line readily detached from reel. Graduations begin at end of line.

	Length in feet,	50	100
12ths of feet	No.	7172T	7175T
10ths "	No.	7172D	7175D
	each \$		
	Length in Meters,	15	30
Metric (one side only)	No.	7172M	7175M
	each \$		
Metric, other side 12ths of feet	No.	7172TM	7175TM
	each \$		

7185. Berkeley Tape, see page 12.

K & E BRONZE TAPE (Special Bronze Alloy), Rust Proof, 1/2 in. wide, on brass frame, large center with long folding handle, frame and all mountings nickelplated. Graduations begin on the line.

	Length in feet,	50	100
12ths of feet.	No.	7387T	7389T
10ths of feet.		7387D	7389D
	each \$		

The Bronze Tapes are intended for use in salt or fresh water, mine waters, on board ship, etc. The lines are heavy bronze ribbon and the etched graduations are sharp and easily read.

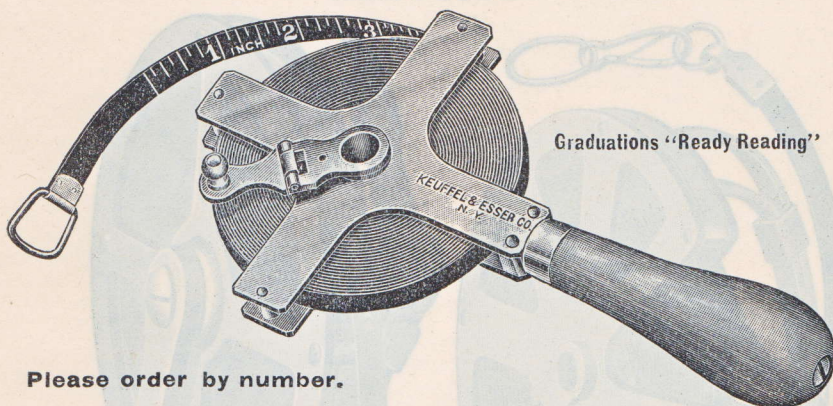
Bronze Tapes in other measures or of other lengths, made to order.

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K & E STEEL TAPES

REG. U. S. PAT. OFF.

KECO Finish.



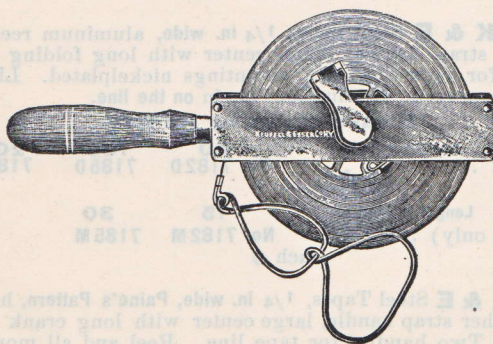
Graduations "Ready Reading"

Please order by number.

Texas K & E Steel Tapes $\frac{3}{8}$ in. wide, on brass frame, large center with long folding handle, frame and all mountings nickelplated. Graduations begin on the line.

Length in feet.		100		150		200	
12ths of feet	No. 7162T	7165T	7166T	7167T	7162D	7165D	7166D
10ths " "							
each \$							

Length in Meters.		15		30	
Metric (one side only)	No. 7162M	7165M			
Metric, other side 12ths of feet	No. 7162TM	7165TM			
each \$					



Frisco K & E Steel Tape, $\frac{1}{4}$ in. wide, strong nickelplated reel, with large center and extra long folding brass handle. Two handles for tape line. All mountings nickelplated. Graduations begin on the line.

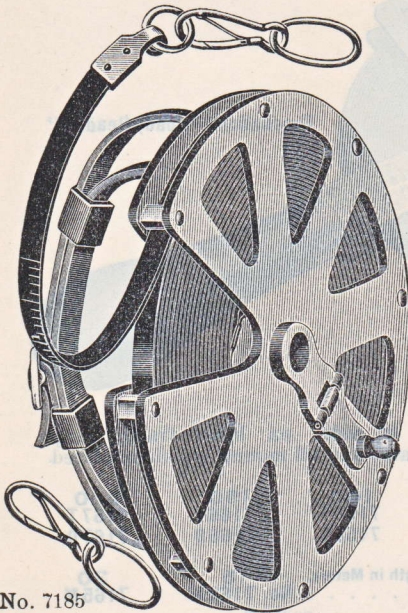
Length in feet		100	
10ths of feet	No. 7195 (complete) \$		
	No. 7195 X (line only with handles) \$		



K & E STEEL TAPES.

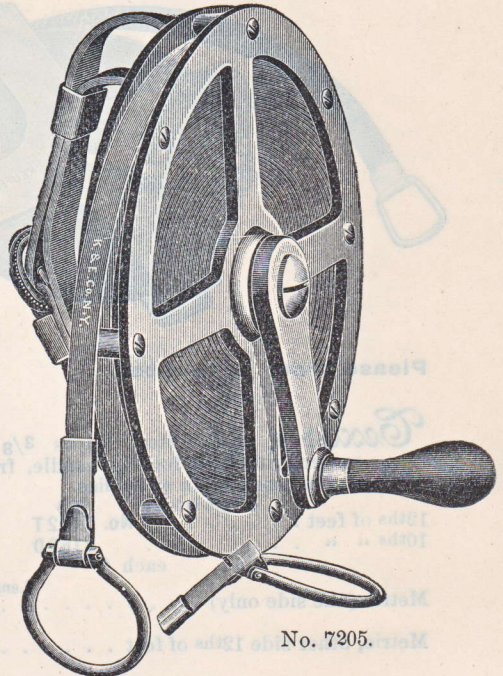
REG. U. S. PAT. OFF.

KECO Finish.



No. 7185

Graduations "Ready Reading."



No. 7205.

Berkeley **K & E** Steel Tapes, 1/4 in. wide, aluminum reel with leather strap handle, large center with long folding handle. Two handles for tape line. All mountings nickelplated. Line readily detached from reel. Graduations begin on the line.

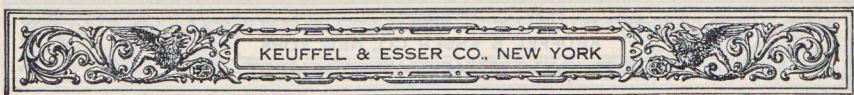
Please order by number.

	Length in feet,	50	100	200	300
10ths of feet		No. 7182 D	7185 D	7187 D	7188 D
	each \$				
	Length in Meters,	15	30		
Metric (oneside only)		No. 7182 M	7185 M		
	each \$				

Purdue **K & E** Steel Tapes, 1/4 in. wide, Paine's Pattern, heavy brass reel with leather strap handle, large center with long crank and swiveling handle. Two handles for tape line. Reel and all mountings nickelplated. Line readily detached from reel. Graduations begin at end of line.

	Length in feet,	100
10ths of feet		No. 7205 D
	each \$	
	Length in Meters,	30
Metric (one side only)		No. 7205 M
	each \$	

The Purdue is an extra-heavy tape, which will withstand rough usage.



K & E STEEL TAPES.

REG. U. S. PAT. OFF.

KECO Finish.



Graduations
"Ready Reading".

Please order
by number.

Cornell K & E Steel Tapes, $\frac{3}{8}$ in. wide, stout bent leather case, patent center, long swiveling flush folding handle, opened by pushing handle grip from opposite side of case. Patented friction brake. Nickelplated mountings. Graduations begin at outside end of ring.

Length in feet,	25	50	75	100
12ths of feet	No. 7250 T	7252 T	7254 T	7255 T
10ths " "	7250 D	7252 D	7254 D	7255 D
each \$				
12ths of feet and links No.	7250 TL	7252 TL	7254 TL	7255 TL
10ths " " " " "	7250 DL	7252 DL	7254 DL	7255 DL
each \$				

Graduating Cornell Steel Tapes to 16ths inches throughout, add per foot \$

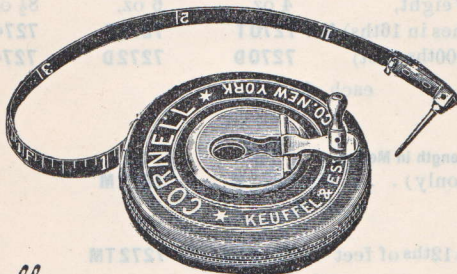
Length in Meters.	10	15	20	25	30
Metric (one side only)	No. 7251 M	7252 M	7253 M	7254 M	7255 M
each \$					

Metric, other side 12ths of feet No. 7251 TM 7252 TM 7253 TM 7254 TM 7255 TM
each \$

NOTE.—The graduations of metric tapes begin on the line.

TREE TAPE.

(FORESTER'S TAPE).



No. 7262DP.

7262DP. *Cornell* K & E Steel Tree Tape, $\frac{3}{8}$ in. wide, 50 ft., one side 10ths and 100ths feet, other side, in the proportion of circumference to diameter, to feet, 10ths and 100ths, stout bent leather case, patent center, long swiveling flush folding handle, opened by pushing handle grip from opposite side of case. Patented friction brake. Nickelplated mountings. Jointed anchor peg for fastening to tree. Graduations begin at end of line, each \$

As the two sides of this tape are graduated in the ratio of diameter to circumference (1:3.1416), either dimension can be read off opposite the other.

For other Circumference Tapes, see pages 17 and 53.

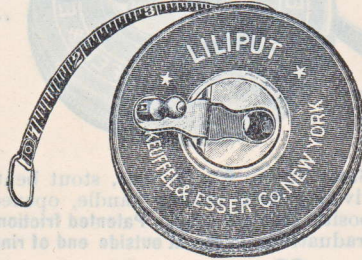
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K & E STEEL TAPES.

REG. U. S. PAT. OFF.

KECO Finish.

Graduations "Ready Reading".



Please order by number.

Liliput K & E Steel Tapes, $\frac{1}{4}$ in. wide, stout bent leather case, patent center, long swiveling flush folding handle, opened by pushing handle grip from opposite side of case. Patented friction brake. Nickel-plated mountings. Graduations begin at outside end of ring.

	25	50	75	100
Length in feet,				
Dimensions,	$2\frac{1}{2} \times \frac{1}{2}$ in.	$2\frac{1}{4} \times \frac{1}{2}$ in.	$3\frac{1}{4} \times \frac{1}{2}$ in.	$3\frac{3}{8} \times \frac{1}{2}$ in.
Weight,	4 oz.	6 oz.	$8\frac{1}{2}$ oz.	11 oz.
12ths of feet (inches in 16ths) No.	7270T	7272T	7274T	7275T
10ths " " (to 100ths feet)	7270D	7272D	7274D	7275D
each \$				

	10	15
Length in Meters,		
Metric (one side only) . . . No.	7271M	7272M
each \$		

Metric, other side 12ths of feet	7271TM	7272TM
each \$		

NOTE.—The graduations of metric tapes begin on the line.

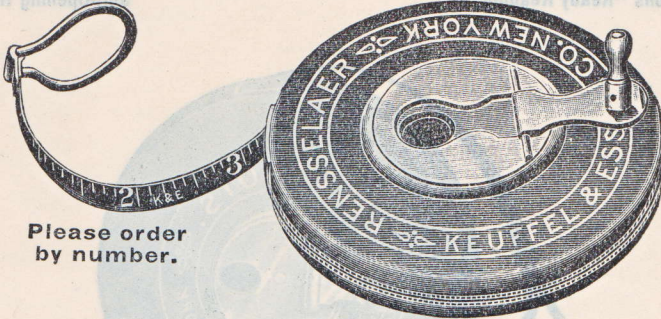
The Liliput Steel Tapes are of the same grade, workmanship and accuracy as the Cornell K & E Steel Tapes but of smaller size. They are very compact and light and, therefore, suitable and convenient for the pocket.



K & E STEEL TAPES.

REG. U. S. PAT. OFF.

KECO Finish.



Please order
by number.

Graduations "Ready Reading".

Rensselaer K & E Steel Tapes, 1/4 in. wide, Paine's Pattern, stout bent leather case, patent center, long swiveling flush folding handle, opened by pushing handle grip from opposite side of case. Patented friction brake. Two handles for tape line. Nickelplated mountings. Line readily detached from case. Graduations begin at end of line.

Length in feet,		50	75	100	
12ths of feet	No. 7292 T	7294 T	7295 T		
10ths " "	7292 D	7294 D	7295 D		
each \$					
Length in Meters,		15	20	25	30
Metric (one side only)	No. 7292 M	7293 M	7294 M	7295 M	
each \$					

The Rensselaer is an extra-fine stout heavy tape.

For Thermometer Scale see page 5.
Etching Tension on Line, see page 5.



K & E STEEL TAPES.

REG. U. S. PAT. OFF.

KECO Finish.

Graduations "Ready Reading".

Self-Opening Handle.



Please order by number.

Illinois K & E Steel Tapes, 1/4 in. wide, Paine's Pattern, stout bent leather case, large center with long folding self-opening handle. **Patented friction brake.** Two handles for tape line. Nickelplated mountings. Line readily detached from case. Graduations begin at end of line.

	Length in feet,	50	75	100
12ths of feet	No. 7302 T	7304 T	7305 T	
10ths " "	7302 D	7304 D	7305 D	
	each \$			

	Length in Meters,	15	20	25	30
Metric (one side only)	No. 7302 M	7303 M	7304 M	7305 M	
	each \$				

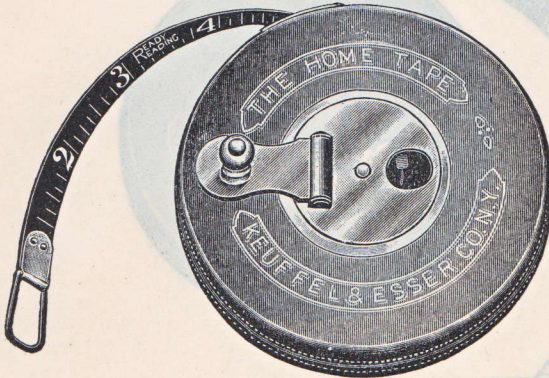
For Thermometer Scale, see page 5.
Etching Tension on Line, see page 5.



K & E STEEL TAPES.

REG. U. S. PAT. OFF.

KECO Finish.



Graduations
"Ready
Reading".

Self-Opening
Handle.

HOME K & E Steel Tapes, $\frac{3}{8}$ in. wide, stout bent leather case, large center, long folding self-opening handle. Patented friction brake. Nickel-plated mountings. Graduations begin at outside end of ring.

Please order by number.

Length in feet.		25	50	75	100
12ths of feet	No.	7350T	7352T	7354 T	7355 T
10ths " "		7350D	7352D	7354 D	7355 D
	each \$				

Length in Meters,		10	15	20	25	30
Metric (one side only)	No.	7351 M	7352 M	7353 M	7354 M	7355M
	each \$					
Metric, other side 12ths of feet	No.	7351 TM	7352 TM	7353 TM	7354 TM	7355 TM
	each \$					

HOME K & E Steel Tapes, $\frac{1}{2}$ inch wide, stout bent leather case, large center, long folding self-opening handle. Patented friction brake. Nickelplated mountings. Graduations begin at outside end of ring.

Please order by number.

Length in feet,		25	50	75	100
12ths of feet	No.	7340T	7342 T	7344 T	7345 T
10ths " "		7340D	7342 D	7344 D	7345 D
	each \$				

Length In Meters,		10	15	20	25	30
Metric (one side only)	No.	7341 M	7342 M	7343 M	7344 M	7345 M
	each \$					
Metric, other side 12ths of feet	No.	7341 TM	7342 TM	7343 TM	7344 TM	7345 TM
	each \$					

7358. HOME K & E STEEL CIRCUMFERENCE Tape, $\frac{3}{8}$ in. wide,

50 feet, one side feet, inches and 8ths, other side in the proportion of circumference to diameter, in feet. Patented friction brake. Stout bent leather case, each \$

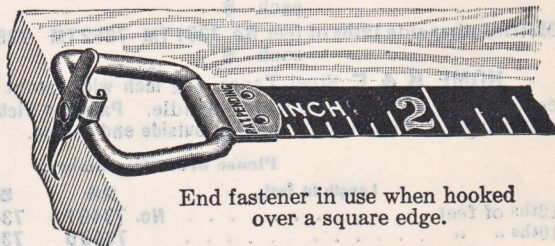
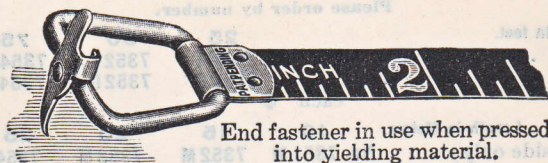
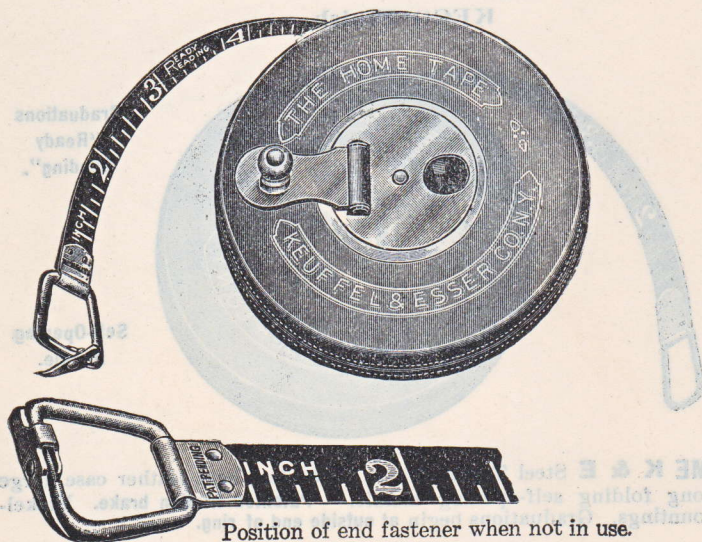
NOTE.—The graduations of metric tapes begin on the line.

KEUFFEL & ESSER CO., NEW YORK

K & E STEEL TAPES

REG. U. S. PAT. OFF.

KECO Finish



HOME K & E STEEL TAPE WITH END FASTENER, $\frac{3}{8}$ in. wide, stout bent leather case, large center, long folding self-opening handle. Patented friction brake on center, preventing recoil of winding drum. Nickelplated mountings. Graduations begin at outside end of ring.

Length in feet.	25	50	75	100
12ths of ft. (ft. to in. and eighth in.) No.	7350TP	7352TP	7354TP	7355TP
	each \$			

The end fastener permits of the use of a measuring tape by one person without the aid of another. The end fastener is a part of the end ring to which it is securely attached and it is easily swung out of the way when not in use. The illustrations plainly show the purpose and use of the K & E tape with end fastener.

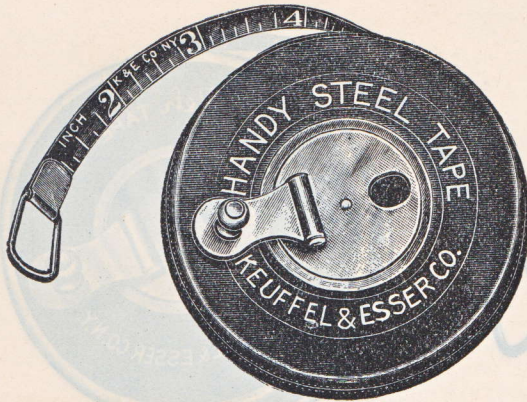


K & E STEEL TAPES.

REG. U. S. PAT. OFF.

KECO Finish.

Graduations
"Ready Reading".



**Self-Opening
Handle.**

HANDY K & E Steel Tapes, $\frac{3}{8}$ inch wide, black sewed "Leatherite" case plain center with long folding, self-opening handle. **Patented friction brake.** Graduations "Ready Reading". Nickelplated mountings. Graduations begin at outside end of ring.

Please order by number.

Length in feet,	25	50	75	100
12ths of feet	No. 7383	7384	7385	7386
each	\$			

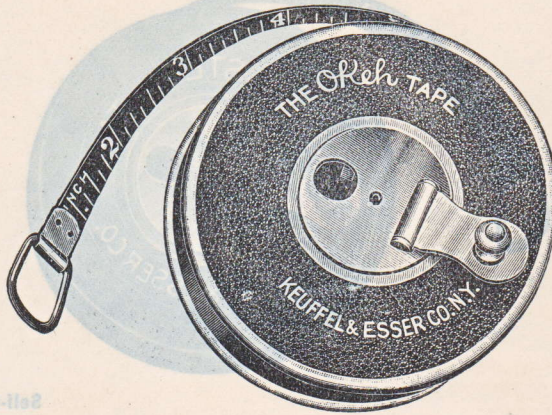


K & E STEEL TAPES.

REG. U. S. PAT. OFF.

KECO Finish.

Graduations
"Ready Reading"



Self-Opening
Handle.

Okeh **K & E** Steel Tapes, $\frac{3}{8}$ inch wide, strong metal case covered with leatherite, self-opening handle. Graduations "Ready Reading." Nickel-plated mountings. Graduations begin at outside end of ring.

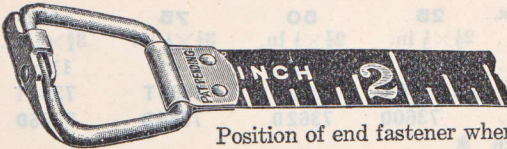
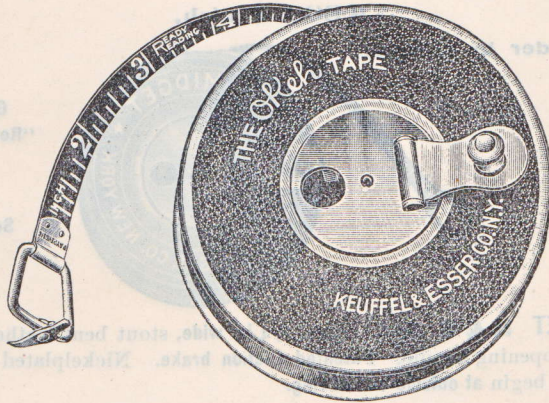
Please order by number.

Length in feet.....	25	50	75	100
12ths of feet.....	No. 7890	7892	7894	7895
.....	each			

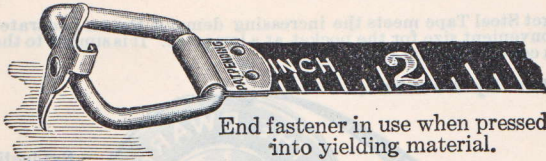
KEUFFEL & ESSER CO. NEW YORK

K & E STEEL TAPES

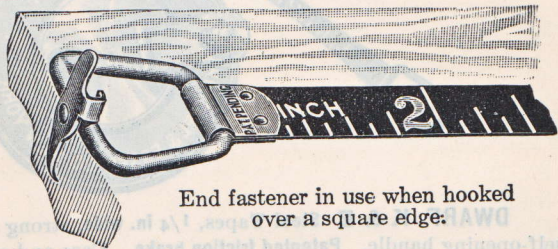
REG. U. S. PAT. OFF.

KECO Finish

Position of end fastener when not in use.



End fastener in use when pressed into yielding material.



End fastener in use when hooked over a square edge.

Okeh K & E STEEL TAPE WITH END FASTENER, $\frac{3}{8}$ in. wide, strong metal case, covered with leatherite, self-opening handle. Nickelplated mountings. Graduations begin at **outside end of ring.**

Length in feet.	25	50	75	100
12ths of ft. (ft. to in. and eighth in.)	No. 7890TP	7892TP	7894TP	7895TP
	each \$			

The end fastener permits of the use of a measuring tape by one person without the aid of another. The end fastener is a part of the end ring to which it is securely attached and it is easily swung out of the way when not in use. The illustrations plainly show the purpose and use of the K & E tape with end fastener.

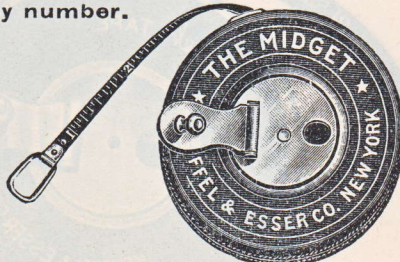


K & E STEEL TAPES.

REG. U. S. PAT. OFF.

KECO Finish.

Please order by number.



Graduations
"Ready Reading".

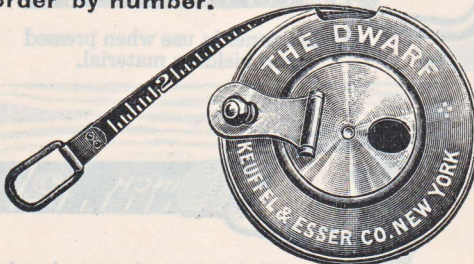
Self-Opening
Handle.

MIDGET K & E Steel Tapes, 1/4 in. wide, stout bent leather case, long folding self-opening handle. Patented friction brake. Nickelplated mountings. Graduations begin at outside end of ring.

	Length in feet, 25	50	75	100
Dimensions	$2\frac{1}{2} \times \frac{1}{2}$ in.	$2\frac{1}{2} \times \frac{1}{2}$ in.	$3\frac{1}{4} \times \frac{1}{2}$ in.	$3\frac{3}{4} \times \frac{1}{2}$ in.
Weight (about)	$3\frac{1}{2}$ oz.	6 oz.	8 oz.	11 oz.
12ths of feet (inches in 16ths) .	No. 7360T	7362T	7364T	7365T
10ths " " (to 100ths feet) .	7360D	7362D	7364D	7365D
	each \$			

The Midget Steel Tape meets the increasing demand for an accurate and durable steel tape of convenient size for the pocket, at a low price. It is similar to the Liliput tape but has a plain center, like the Home Tape.

Please order by number.



Graduations
"Ready Reading"

Self-Opening Handle.

DWARF K & E Steel Tapes, 1/4 in. wide, strong steel case, long folding self-opening handle. Patented friction brake. Case and mountings nickelplated. Graduations begin at outside end of ring.

	Length in feet, 25	50
Dimensions	$2\frac{1}{2} \times \frac{3}{8}$ in.	$2\frac{3}{4} \times \frac{3}{8}$ in.
Weight (about)	3 oz.	5 oz.
12ths of feet. (inches in 16ths) .	No. 7380T	7382T
10ths " " (to 100ths feet) .	7380D	7382D
	each \$	

The Dwarf Steel Tape is an accurate and durable tape. The case is of steel and will stand much wear and rough usage. It is similar to the Armor tape but of pocket size,

7262 D P and 7358. Tree Tapes, see pages 13 and 17.

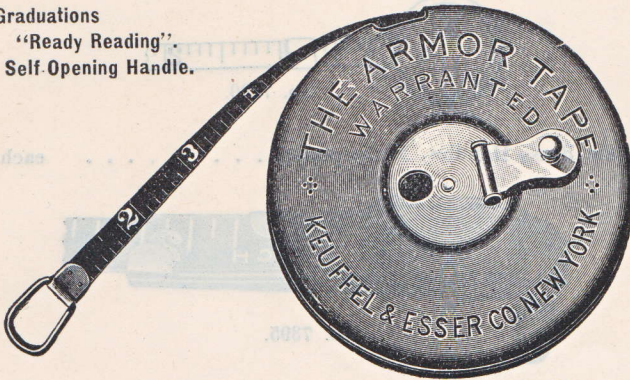


K & E STEEL TAPES.

REG. U. S. PAT. OFF.

KECO Finish.

Graduations
"Ready Reading".
Self-Opening Handle.



ARMOR K & E Steel Tapes, $\frac{3}{8}$ in. wide, strong steel case, large center with long folding self-opening handle. Patented friction brake. Case and mountings nickelplated. Graduations begin at outside end of ring.

Please order by number.

Length in feet,	25	50	75	100
12ths of feet	No. 7370T	7372T	7374T	7375T
10ths " "	7370D	7372D	7374D	7375D
each \$				

Length in Meters,	10	15	20	25	30
Metric (one side only).	No. 7371M	7372M	7373M	7374M	7375M
each \$					

Metric, other side 12ths of feet	No. 7371TM	7372TM	7373TM	7374TM	7375TM
each \$					

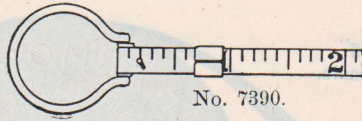
NOTE.—The graduations of metric tapes begin on the line.

The strong pressed steel case of the Armor Tape, which is unaffected by oil or grit, adapts this Tape particularly well to Mechanics' use.



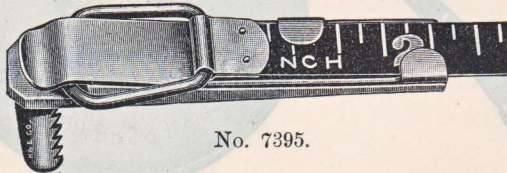
HANDLES FOR TAPES.

For Paine's Pattern Tapes.



No. 7390.

7390. Plain Brass Handles, Nickelplated. each \$



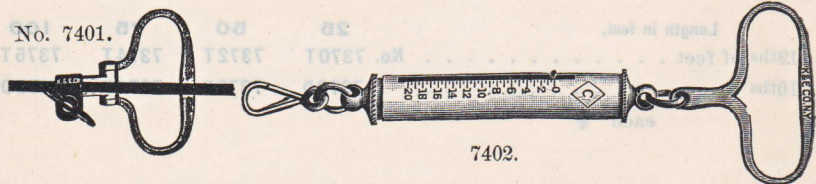
No. 7395.

7395. Tape Hook, aluminum, for tapes $\frac{3}{8}$ inch wide; fitting our Cornell, Home, Handy, Armor and Okeh tapes in feet and inches each \$

TENSION AND CLAMPING HANDLES.

For Engineer's Steel Tapes.

These tension handles form a very valuable addition to a tape, as they enable the user to apply exactly the tension at which the tape is standard. They are recommended, also, for use with the fine narrow tapes.



7401. Clamping Handles, brass, nickelplated, for narrow tapes, to attach to any part of tape each \$

7402. Tension Handles, brass, nickelplated, indicating tension up to 20 lbs., reading by half pounds "

7403. do. do. like No. 7402, but indicating tension up to 30 lbs. "

NICKELPLATING STEEL TAPE LINES.

We are prepared to furnish our steel tape lines nickelplated in the best and most durable manner (for protection against rust) at the following extra charge:

Length in feet,	25	50	75	100
extra each \$				

KEUFFEL & ESSER CO. NEW YORK

WOVEN TAPES.

Woven tapes of any make, are liable to stretch or shrink. Woven tapes should, therefore, not be used when exact measurements are required, without constant attention to their condition by comparison with a standard steel tape. Any of the **K & E Steel Tapes** will answer this purpose, as they are made according to the U. S. Standard of the National Bureau of Standards at Washington.

EXCELSIOR MEASURING TAPES.

REG. U. S. PAT. OFF.

WARD'S PATENT ENGINEER'S TAPE.

Graduations "Ready Reading"



*7411. Excelsior Engineer's Metallic Woven Tapes, Ward's Patent, 50 feet, of same quality as No. 7442 (page 27) in bent leather case, long folding handle. Graduations begin at outside end of ring. All mountings nickelplated, with Directions.....each. \$

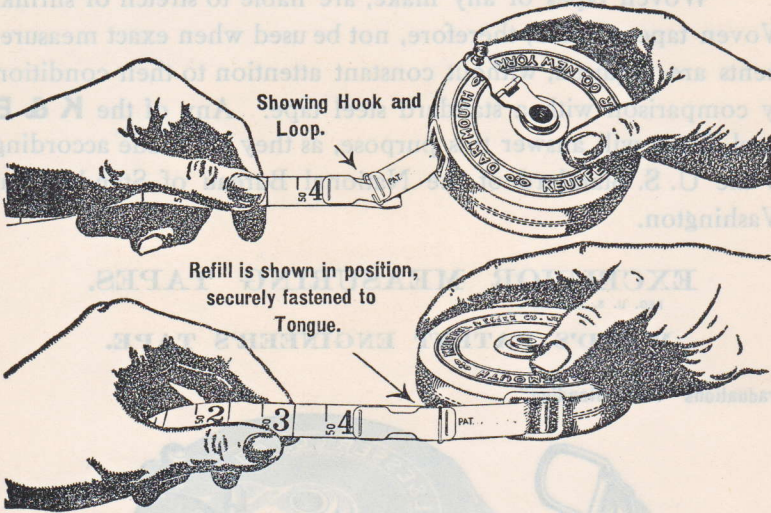
This is a woven tape in best bent leather case. One side of the tape is marked in feet and tenths, as for ordinary measurements, while the other side is marked in a special manner for setting Slope Stakes, or for finding the center from the Slope Stakes after the Center Stake has been removed. This tape eliminates calculation of distances out to toe of slope; reduces the work of the levelman to a minimum; and saves considerable time in the setting of slope stakes.

A pamphlet, *How to Set Slope Stakes*, giving full particulars of the method of using them, is supplied with each one of these Tapes.

*Made to order only.

KEUFFEL & ESSER CO., NEW YORK

NEW METHOD OF INSERTING RE-FILLS IN TAPE CASES.



The latest step in the evolution of woven tape lines is illustrated above. One good tape case will usually outlast a number of woven tape lines. The old way of inserting a new tape line in the case was always more or less cumbersome, as it was necessary to open the metal center of the case, remove the end of the old line, insert the re-fill through the mouth of the case, and then — this was the most annoying part of the task — try to make the loop at the end of the re-fill slip over the binding post of the metal center.

In working out the problem of improving upon the old method, we realized that the means to be adopted would have to be applicable not only to new tape cases, still to be constructed, but also to the thousands of our tape cases already in use.

In the patented device illustrated herewith, we offer a most successful solution of this problem. A short strip (or tongue) of woven tape line is attached by a loop to the binding post of the tape case. The other end of the tongue has a special form of hook over which is slipped the specially constructed loop in the end of the re-fill, in the manner shown in the illustration.

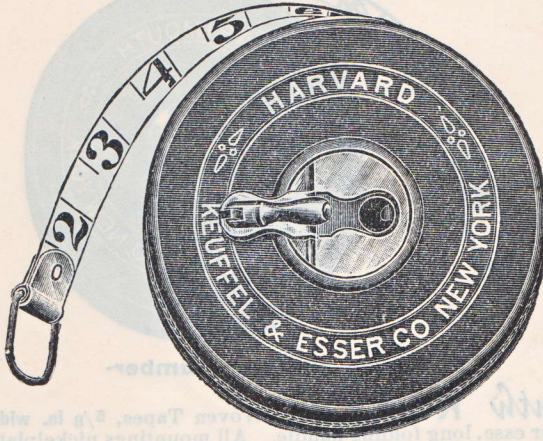
Our Harvard, Dartmouth, Piccolo and Samson Tapes are now furnished with this new patented tongue, and re-fills for the above tapes have the new type of loop. These re-fills will also fit old-style cases which do not have the new tongue.



K & E WOVEN TAPES.

REG. U. S. PAT. OFF.

Graduations "Ready Reading".



Please order by number.

Harvard **K & E** Metallic Woven Tapes, $\frac{5}{8}$ in. wide, stout bent leather case, patent center, long flush folding handle, opened by pushing handle grip from opposite side of case. All mountings nickelplated. Leather reinforced end. Graduations begin at outside end of ring. For patent Re-filling Device see page 25.

Length in feet,	25	50	75	100
12ths of feet	No. 7420T	7422T	7424T	7425T
10ths " "	7420D	7422D	7424D	7425D
each \$				

12ths of feet and Links,	No. 7420TL	7422TL	7424TL	7425TL
10ths " " " "	7420DL	7422DL	7424DL	7425DL
each \$				

Length in Meters,	10	15	20	25	30
Metric (one side only)	No. 7421M	7422M	7423M	7424M	7425M
each \$					
Metric, other side 12ths of feet	7421TM	7422TM	7423TM	7424TM	7425TM
each \$					

NOTE.—The graduations of metric tapes begin on the line.

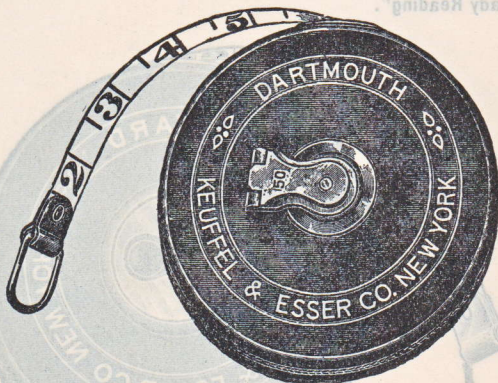
For lines without case (Re-fills), see page 27.

KEUFFEL & ESSER CO., NEW YORK

K & E WOVEN TAPES.

REG. U. S. PAT. OFF.

Graduations "Ready Reading".



Please order by number-

Dartmouth **K & E** Metallic Woven Tapes, $\frac{5}{8}$ in. wide, stout bent leather case, long folding handle. All mountings nickelplated. Leather reinforced end. Graduations begin at outside end of ring. For patented Re-filling Device, see page 25.

Length in feet,	25	50	75	100	
12ths of feet	No. 7440 T	7442 T	7444 T	7445 T	
10ths “ “	7440 D	7442 D	7444 D	7445 D	
each \$					
12ths of feet and Links,	No. 7440 TL	7442 TL	7444 TL	7445 TL	
10ths “ “ “ “	7440 DL	7442 DL	7444 DL	7445 DL	
each \$					
Length in Meters,	10	15	20	25	30
Metric (one side only)	No. 7441 M	7442 M	7443 M	7444 M	7445 M
each \$					
Metric, other side 12ths of feet	No. 7441 TM	7442 TM	7443 TM	7444 TM	7445 TM
each \$					

K & E METALLIC WOVEN TAPES (RE-FILLS.)

FOR HARVARD AND DARTMOUTH TAPES.

Please order by number.

Length in Feet,	25	50	75	100
12ths of feet	No. 7460T	7462T	7464T	7465T
10ths “ ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” ” 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NOTE.—The graduations of metric tapes begin on the line.



K & E WOVEN TAPES.

REG. U. S. PAT. OFF.



Graduations
"Ready Reading".

Self-Opening
Handle.

Please order by number.

Piccolo K & E Metallic Woven Tapes, $\frac{3}{8}$ in. wide, stout bent leather case, large center, long folding self-opening handle, all mountings nickel-plated, line reinforced with leather. Graduations begin at outside end of ring. For patented Re-filling Device, see page 25.

Length in feet,	25	50
Size and Weight,	$2\frac{3}{4} \times \frac{1}{2}$ in., $4\frac{1}{2}$ oz.	$3\frac{1}{2} \times \frac{1}{2}$ in., $8\frac{1}{2}$ oz.
12ths of feet (inches in eighths)	7480T	7482T
10ths " " (to 100ths feet)	7480D	7482D
each \$		
Length in Meters,	10	15
Metric (one side only)	No. 7481M	7482M
each \$		

RE-FILLS FOR PICCOLO METALLIC WOVEN TAPES.

Please order by number.

Length in feet,	25	50
12ths of feet (inches in eighths)	No. 7470T	7472T
10ths " " (of 100ths feet)	7470D	7472D
each \$		
Length in Meters,	10	15
Metric (one side only)	7471M	7472M
each \$		

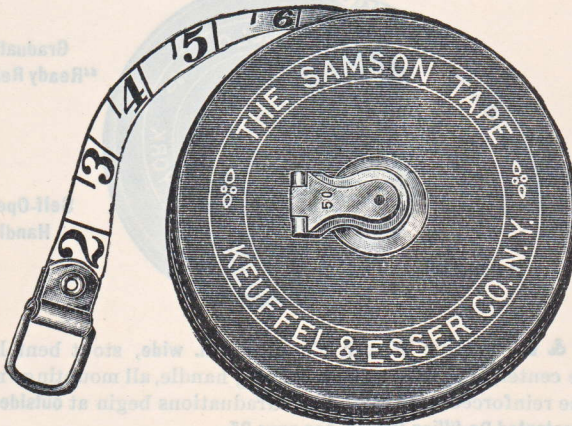
NOTE.—The graduations of metric tapes begin on the line.

Piccolo Woven Tapes are warranted to be of the same grade and workmanship as the Dartmouth K & E Woven Tapes. They differ from the Dartmouth only in size and weight, being very compact and light and, therefore, suitable and convenient for the pocket. This is a strong tape and will wear well.



K & E WOVEN TAPES.

REG. U. S. PAT. OFF.



Graduations
"Ready Reading"

Line Guaranteed
Non Metallic.

Please order by number.

Samson K & E Woven Tapes, $\frac{5}{8}$ in. wide, stout bent leather case, long folding handle. All mountings nickelplated. Extra-heavy line, reinforced end. Graduations begin at outside end of ring. For Patented Re-filling Device, see page 25.

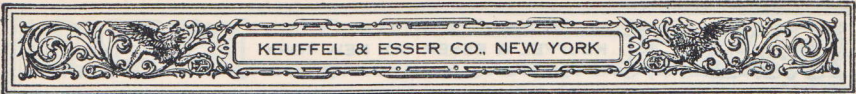
Length in feet,	25	50	75	100
12ths of feet No.	7490T	7492T	7494T	7495T
10ths " "	7490D	7492D	7494D	7495D
each \$				

The Samson is a woven line which surpasses all others in durability, and is made especially to withstand the severe conditions of railroad construction, lumbering, dock building, mining, etc. The tape will prove highly efficient where steel tapes and other woven lines do not give satisfaction owing to their being affected by dampness. The line is very closely woven and has a coating which protects it from moisture.

LINES WITHOUT CASES FOR SAMSON TAPES.

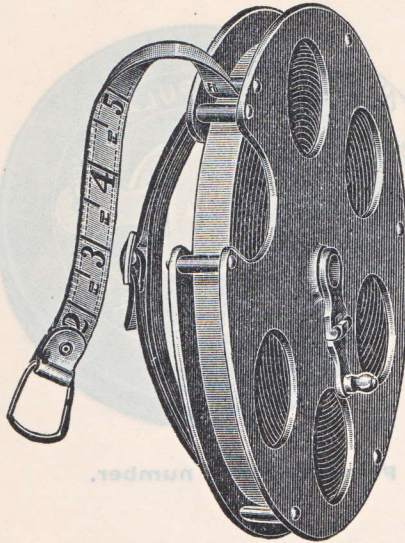
(RE-FILLS.)

Length in feet,	25	50	75	100	150
12ths of feet No.	7500T	7502T	7504T	7505T	7506T
10ths " "	7500D	7502D	7504D	7505D	7506D
each \$					



K & E WOVEN TAPES.

REG. U. S. PAT. OFF.



Graduations
"Ready Reading."

Line Guaranteed
Non Metallic.

Please order by number.

Samson K & E Woven Tapes, $\frac{5}{8}$ in. wide, aluminum reel with leather strap handle, large center with long folding handle. All mountings nickel plated. **Extra heavy** line, reinforced end. Graduations begin at outside end of ring. For patented re-filling device, see page 25.

Length in feet	50	100	150
12ths of feet.....	No. 7522T	7525T	7526T
10ths " "	" 7522D	7525D	7526D

The Samson tape line, since it has **no metal interwoven in the fabric**, is a non-conductor of electricity. This fact and its durability have rendered it deservedly popular for measurements in the vicinity of electrical installations.

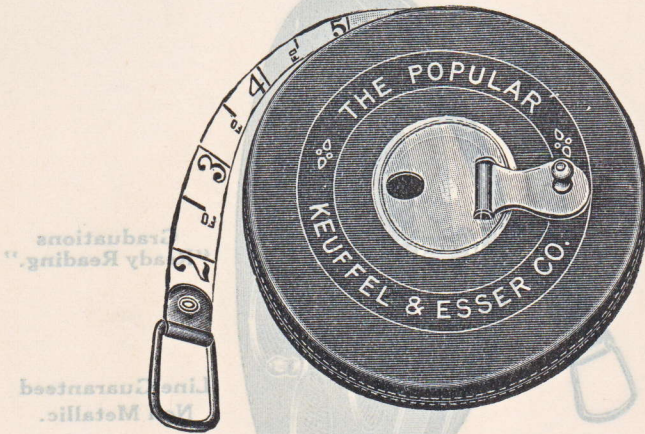
For Re-Fills for Samson Tapes, see page 29.



K & E WOVEN TAPES.

REG. U. S. PAT. OFF.

Graduations "Ready Reading".



Please order by number.

THE POPULAR Woven Tapes, 5/8 in. wide, substantial bent leather case, flat folding handle. All mountings nickelplated. Stout woven line, end reinforced with leather. Graduations begin at outside end of ring.

	Length in feet,	25	50	75	100
12ths of feet	No. 7510T	7512T	7514T	7515T	
10ths " "	7510D	7512D	7514D	7515D	
	each \$				
	Length in Meters,	15	25	30	
Metric (one side only)	No. 7512M	7514M	7515M		
	each \$				

NOTE.—The graduations of metric tapes begin on the line.

The **POPULAR** is a low-priced, well-made woven tape in stout bent leather case, with durable center and handle. The line is of the usual width and finish of our woven tapes, heavily coated, and has leather reinforced end.

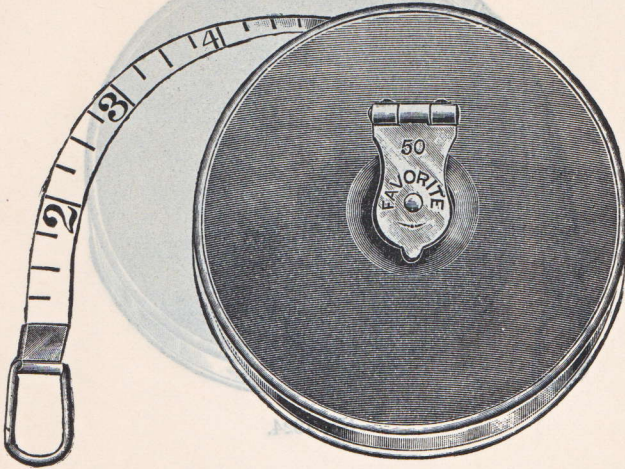


FAVORITE

REG. U. S. PAT. OFF.

MEASURING TAPES.

(Ass skin)



No. 7902.

ENAMELED STEEL CASE, cotton line, 1/2 in. wide, seamless brass rim folding brass handle, brass mountings. Graduations begin at outside end of ring.

Please order by number.

Length in feet,	25	50	75	100
No. 7900	7902	7904	7905	
per. doz. \$				

Length in Meters,	10	15	20	25	30
7901M	7902M	7903M	7904M	7905M	
per doz. \$					

NOTE.—The graduations of metric tapes begin on the line.

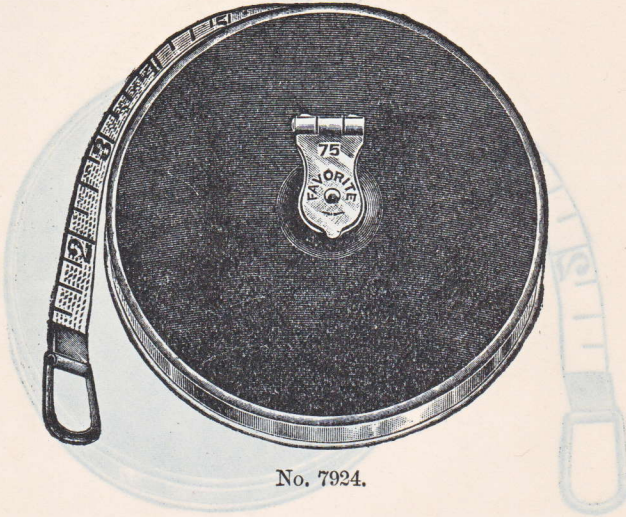
Favorite Tapes are packed one-half dozen in a box.



FAVORITE

REG. U. S. PAT. OFF.

MEASURING TAPES.



No. 7924.

ENAMELED STEEL CASE, corded line, $\frac{1}{2}$ in. wide, seamless brass rim, folding brass handle, brass mountings. Graduations begin at outside end of ring.

Please order by number.

Length in feet,	25	50	75	100
	No. 7920	7922	7924	7925
per doz. \$				

Length in meters,	10	15	20	25	30
	No. 7921 M	7922 M	7923 M	7924 M	7925 M
per doz. \$					

NOTE.—The graduations of metric tapes begin on the line.

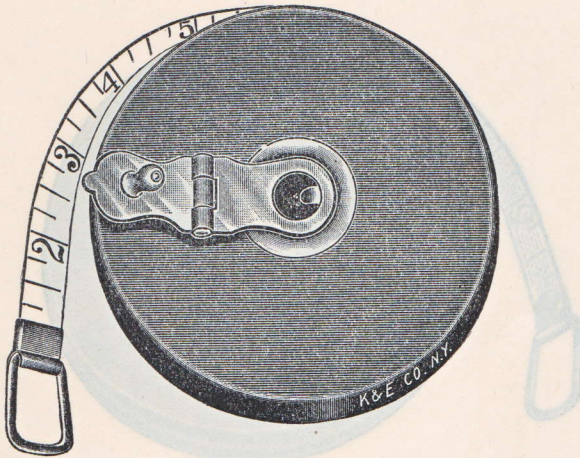
Favorite Tapes are packed one-half dozen in a box.



FAVORITE

REG. U. S. PAT. OFF.

MEASURING TAPES.



No. 7962.

BENT LEATHER CASE, extra cotton line, 1/2 in. wide, folding brass handle, brass mountings. Graduations begin at outside end of ring.

Length in feet	25	50	75	100	
	No. 7960	7962	7964	7965	
per doz. \$					
Length in Meters,	10	15	20	25	30
	No. 7961M	7962M	7963M	7964M	7965M
per doz. \$					

BENT LEATHER CASE, corded line, 1/2 in. wide, folding brass handle, brass mountings. Graduations begin at outside end of ring.

Length in feet	25	50	75	100	
	No. 7970	7972	7974	7975	
per doz. \$					
Length in Meters,	10	15	20	25	30
	No. 7971M	7972M	7973M	7974M	7975M
per doz. \$					

NOTE.—The graduations of metric tapes begin on the line.

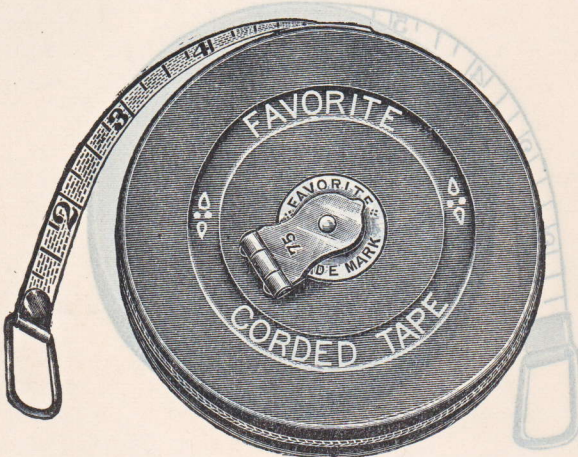
Favorite Tapes are packed one-half dozen in box.



FAVORITE

REG. U. S. PAT. OFF.

MEASURING TAPES.



No. 7984.

Please order by number.

FINE SEWED BENT LEATHER CASE, corded line, 1/2 in. wide, folding brass handle, brass mountings. Graduations begin at outside end of ring.

Length in feet,

25	50	75	100
No. 7980	7982	7984	7985

per doz. \$

Length in meters,

10	15	20	25	30
No. 7981 M	7982 M	7983 M	7984 M	7985 M

per doz. \$

NOTE.—The graduations of metric tapes begin on the line.

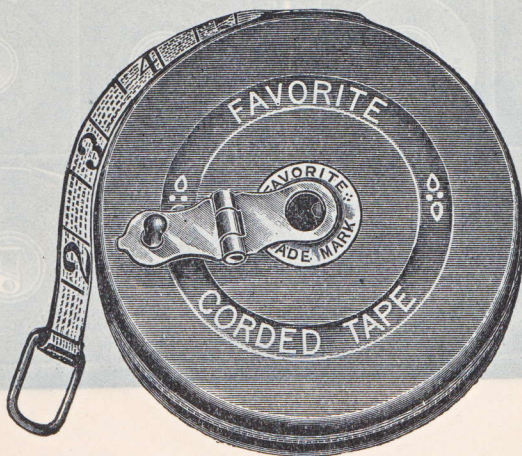
Favorite Tapes are packed one-half dozen in a box.



FAVORITE

REG. U. S. PAT. OFF.

MEASURING TAPES.



No. 7992.

The tray shown above is strongly constructed of polished hardwood; the nests are lined with blue velvet and the label is in gilt lettering on a black background. The small size of the tray and its light weight not only admit of counter as a complete unit for the customer's inspection. The base is padded with felt and is provided with a small label for the customer's reference.

FINE SEWED BENT LEATHER CASE, corded line, 5/8 in. wide, folding brass handle, brass mountings. Graduations begin at outside end of ring.

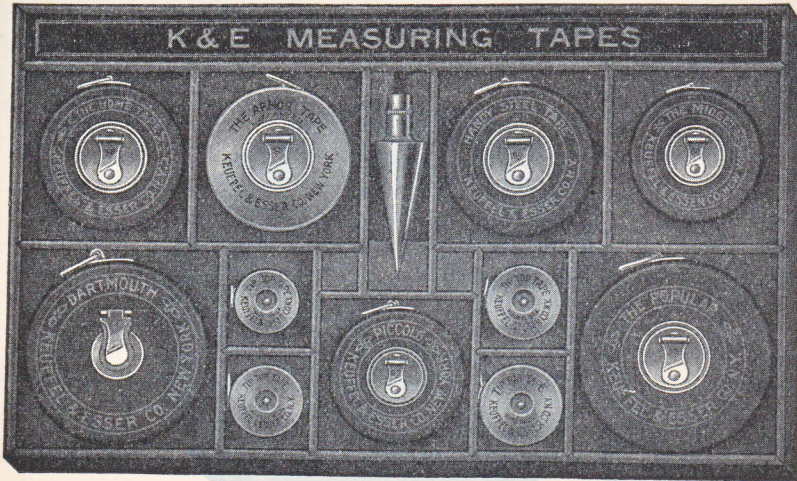
Length in feet,				
	25	50	75	100
	No. 7990	7992	7994	7995
per doz. \$				
Length in Meters,				
	10	15	20	30
	No. 7991M	7992M	7993M	7994M
per doz. \$				

NOTE.—The graduations of metric tapes begin on the line.

Favorite Tapes are packed one-half dozen in a box.

KEUFFEL & ESSER CO., NEW YORK

TAPE DISPLAY TRAY NO. 52



Tray No. 52.

Size, 17 x 10 x 1¼ in. (overall)

Weight (including contents), 7½ lbs.

The tray shown above is strongly constructed of polished hardwood; the nests are lined with blue velvet, and the label is in gilt lettering on a black background. The small size of the tray and its light weight not only admit of its being placed in any show case, but also allow the display to be handled on the counter as a complete unit for the customers' inspection. The base is padded with felt in order to prevent injury to any surface upon which the tray may be placed.

The tray is furnished with contents; the charge being for contents only.

CONTENTS OF CASE

One	7352T	Home K. & E Steel Tape,	50 ft.,	3/8 in. wide,	
"	7372T	Armor " " "	50 "	3/8 "	" "
"	7384	Handy " " "	50 "	3/8 "	" "
"	7362T	Midget " " "	50 "	3/8 "	" "
"	7442T	Dartmouth K & E Metallic Tape,	50 ft.,	5/8 in. wide,	
"	7480T	Piccolo " " "	25 "	3/8 "	" "
"	7512T	Popular " Woven	50 "	5/8 "	" "
"	7710T	Tip-Top " Steel	36 in.,	1/4 "	" "
"	7712T	" " "	72 "	1/4 "	" "
"	7713T	" " "	96 "	1/4 "	" "
"	7722T	" " Linen	72 "	1/4 "	" "
"	N6490.	—6 oz. Fine Brass Plumb Bob, with steel point,			
		screw cap, weight, 6 oz.			

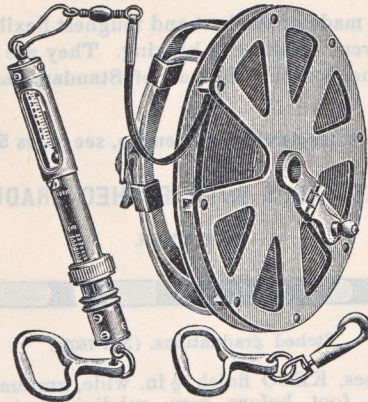
Complete in case, list.....\$



K & E CITY ENGINEER'S STANDARD TAPE.

KECO Finish.

(Not Subdivided.)



No. 7600.

7600. City Engineer's Standard Tape, $\frac{3}{32}$ in. wide, 50 ft., with improved spring balance adjustable for temperature, with level and thermometer, two nickelplated handles on aluminum reel. each \$

7601. City Engineer's Standard Tape, like No. 7600, but 100 ft.

The spring balance consists of two telescoping brass tubes connected by a strong spring; the inner tube carries the spirit level and tension mark, and the outer one carries the thermometer which is protected by a revolving semi-tubular cover. A knurled clamping ring encircles the outer tube; in it is cut a V-shape groove representing the **END MARK** of the measure. The spring balance up to the groove in the ring is **INCLUDED IN THE MEASURE**. On the outer tube is engraved the temperature scale, which compensates expansion and contraction and is marked with the corresponding degrees Fahrenheit. Correction for temperature, *i. e.* allowance for contraction and expansion is made by adjusting the clamping ring on the temperature scale to the degree indicated by the thermometer. The starting point is marked by another V-shape groove in a brass plate at the other end of the tape. There are no intermediate graduations on this tape, and the tension and temperature corrections apply to its entire length only.

DIRECTIONS.

To use this tape, adjust the clamping ring according to the temperature as read on the thermometer, then bring the V-shape zero groove in the brass lug at the other end of the line exactly over the starting point by means of a suspended plumbbob; pull the telescoping handle until the tension marks coincide, and bring the tape into a horizontal plane by means of the spirit level. A second plumbbob suspended from the V-shape groove on the spring balance will then indicate the terminal point on the ground.

KEUFFEL & ESSER CO., NEW YORK

K & E

REG. U. S. PAT. OFF.

FINE FLAT STEEL WIRE TAPES

FOR

CITY, MINE, BRIDGE AND RAILROAD ENGINEERING.

(KECO Finish.)

GRADUATED.

These tapes are made of the best and toughest flexible steel ribbon, carefully tempered to prevent breaking or kinking. They are graduated according to the standard of the National Bureau of Standards and are correct at 68° Fahrenheit.

For certificate of temperature and tension, see pages 5 and 6.

FLAT WIRE TAPES WITH ETCHED GRADUATIONS.

KECO FINISH.



Etched graduations, (No. 7607).

- 7607.** Flat Wire Tapes, KECO finish, $\frac{1}{8}$ in. wide, graduated at every foot, extra foot before zero subdivided to 10ths and 100ths. See page 46. The graduations are etched in a new manner, which insures their durability in rough work. They can be furnished in any length from 100 feet up to 500 feet; 2 detachable nickelplated brass handles. 100 feet . \$
Each additional 100 feet.



Etched graduations, (No. 7608).

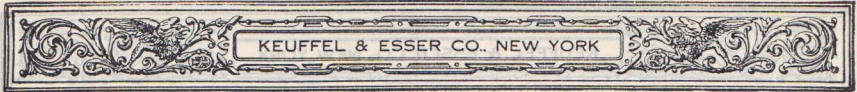
Graduated, feet to 100ths throughout:

- 7608.** Flat Wire Tapes, KECO finish, $\frac{1}{8}$ in. wide, etched to 10ths and 100ths ft., black line, bright numbers and graduations. They can be furnished in any length from 100 feet up to 300 feet. 2 detachable nickelplated brass handles, 100 feet \$
Each additional 100 ft., same graduation.
- 7609.** Flat Wire Tapes, like No. 7608, but nickelplated . . .
Each additional 100 ft., same graduation.

Above tapes with end feet subdivided instead of extra subdivided foot **BEFORE** zero, furnished to order without extra charge.

Reels are listed separately (see pages 42 to 45) and are not included in the price of these tapes.

Fine flat wire tapes graduated in Links, Varas, or other measures, furnished to order at short notice.



FLAT WIRE TAPES, GRADUATED ON CLAMPED SLEEVES.



Graduations on clamped sleeves, (No. 7610).

Our Fine Flat Wire Steel Tapes with brass sleeves are of the most improved type. The sleeves are firmly clamped (or clamped and soldered) and are notched directly opposite the graduation, for the exact locating of the plumb-bob cord. The ends of the sleeves are beveled to prevent their catching on obstructions when measuring, or on each other when winding or unwinding the tape.

These Tapes can be made in any length up to 1000 feet, without joints.

- 7610.** Flat Wire Tapes, KECO finish, $\frac{1}{2}$ in. wide, black line, graduated on **clamped brass sleeves**, 2 detachable nickelplated brass handles, graduated every foot, extra foot before zero subdivided to 10ths, see page 46 100 feet. \$
Each additional 100 ft., same graduation
- 7610D.** Flat Wire Tapes like No. 7610, but graduated every 5 feet, first and last five feet every foot, end feet to 10ths, 100 feet.
Each additional 100 feet, same graduation
- 7610F.** Flat Wire Tapes like No. 7610, but graduated every 10 feet, first and last ten feet every foot, end feet to 10ths, 100 feet.
Each additional 100 feet, same graduation
- 7610W.** White plating, to resist rust, per 100 feet

No. 7610 with end feet subdivided instead of extra subdivided foot BEFORE zero, furnished to order without extra charge.

FLAT WIRE TAPES, METRIC; CLAMPED SLEEVES.



Graduations on clamped sleeves, (No. 7612).

- 7612.** Flat Wire Tapes, (Metric) KECO finish, $\frac{1}{2}$ in. wide, graduated on **clamped brass sleeves**, 2 detachable nickelplated brass handles, graduated every 20 cm., end meters to decimeters, 25 meters, \$
Each additional 25 meters
- 7612C.** Flat Wire Tapes like No. 7612, but graduated every half meter, end meters to decimeters, 25 meters
Each additional 25 meters
- 7612E.** Flat Wire Tapes like No. 7612, but graduated every meter, end meters to decimeters, 25 meters
Each additional 25 meters
- 7612W.** White plating, to resist rust, per 25 meters

Reels are listed separately (see pages 42 to 45) and are not included in the price of these tapes.

Fine flat wire tapes graduated in Links, Varas, or other measures, furnished to order at short notice.

KEUFFEL & ESSER CO., NEW YORK

FLAT WIRE TAPES GRADUATED ON SOLDERED SLEEVES.

52

Graduations on soldered sleeves, (No. 7613).

7613. Flat Wire Tapes, $\frac{1}{8}$ in. wide, graduated on **tubular brass sleeves carefully soldered** to the tape, to prevent corrosion from moisture entering between sleeves and tape line, **heavily plated with white metal** (to resist rust), 2 detachable nickelplated brass handles, graduated every foot, extra foot before zero subdivided to 10ths., see page 46 100 feet \$
Each additional 100 ft., same graduation

7613D. Flat Wire Tapes like No. 7613, but graduated every 5 feet, first and last five feet every foot, end feet to 10ths, 100 feet. . .
Each additional 100 ft., same graduation

7613F. Flat Wire Tapes like No. 7613, but graduated every 10 feet, first and last ten feet every foot, end feet to 10ths, 100 feet.
Each additional 100 ft., same graduation

No. 7613 with end feet subdivided instead of extra subdivided foot before zero, furnished to order without extra charge.

FLAT WIRE TAPES, METRIC, SOLDERED SLEEVES.

7

25

Graduations on soldered sleeves, (No. 7614).

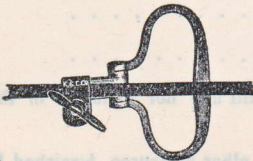
7614. Flat Wire Tapes, (Metric) $\frac{1}{8}$ in. wide, graduated on **tubular brass sleeves carefully soldered** to the tape to prevent corrosion from moisture entering between sleeves and tape, **heavily plated with white metal** (to resist rust), 2 detachable nickel-plated brass handles, graduated every 20 centimeters, and meters to decimeters, 25 meters. \$
Each additional 25 meters

7614C. Flat Wire Tapes like No. 7614, but graduated every half meter, end meters to decimeters, 25 meters.
Each additional 25 meters

7614E. Flat Wire Tapes like No. 7614, but graduated every meter, end meters to decimeters, 25 meters
Each additional 25 meters

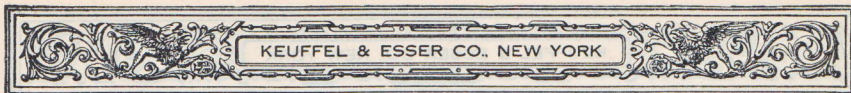
NOTE. Etched tapes (or tapes with etched end units) can be furnished nickelplated, but they cannot be furnished plated with white metal. Tapes plated with white metal cannot be furnished with end units etched.

Reels are listed separately (see pages 42 to 45) and are not included in the price of these tapes.



For Clamping Handle to attach at any part of tape line, and for Tension Handles, see page 23.

Fine flat wire tapes graduated in Links, Varas, or other measures, furnished to order at short notice.



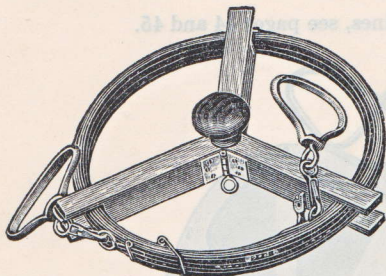
K & E

REG. U. S. PAT. OFF.

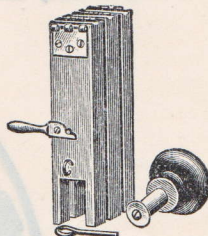
REELS FOR STEEL TAPES AND CHAINS.

The reels here described embody all the latest improvements, the result of years of experience and study.

For reels to carry extra long lines, see pages 44 and 45.

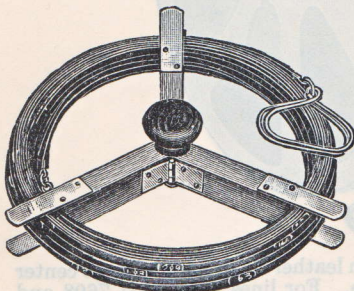


7650 A-1.

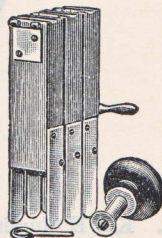


7650 A-1
folded

7650 A-1. Folding Reel, hardwood, plain brass handle and hook to hold one end of line when reeling up; spring clamp to prevent line from unreeling. For flat wire tapes Nos. 7607, 7608 and 7609, 100 to 300 ft. long; and flat wire tapes Nos. 7610 and 7613 and all Band Chains (pages 47 and 48) 100 to 200 ft. long.....each \$



7650 A-3



7650 A-3 folded.

7650 A-3. Folding Reel, hardwood, similar to 7650 A-1, but reinforced with metal plates. For flat wire tapes No. 7607, 400 and 500 ft. long, and flat wire tapes Nos. 7610, and 7613, 300 to 500 ft. long and all Band Chains (pages 47 and 48) 300 ft. long.each \$

Equivalent metric lengths are as follows to the nearest meter: 100' = 30 meters; 200 ft. = 61 meters; 300 ft. = 91 meters; 500 ft. = 152 meters.

Please note that these prices are for REELS ONLY. The lines shown on some of the cuts of the reels are for better illustration.

When ordering reels separately, please state for which length of line and kind of graduation.

KEUFFEL & ESSER CO. NEW YORK

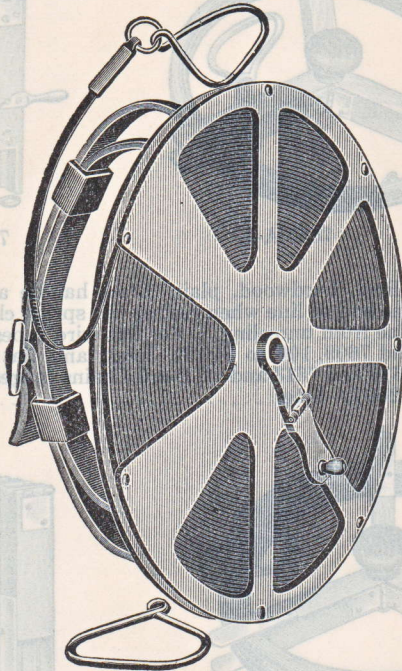
K & E REELS FOR FLAT WIRE TAPES.

REG. U. S. PAT. OFF.

The reels here described embody all the latest improvements, the result of years of experience and study. They fill a long-felt want, in that they provide a convenient means for rapidly and correctly assembling the narrow flat wire tapes into a compact and portable form or unit.

Any of the Steel Tapes listed under Nos. 7607 to 7614 can be furnished on the reels here listed, with such limitations as to length as are stated in the descriptions of the reels.

For reels to carry extra long lines, see pages 44 and 45.



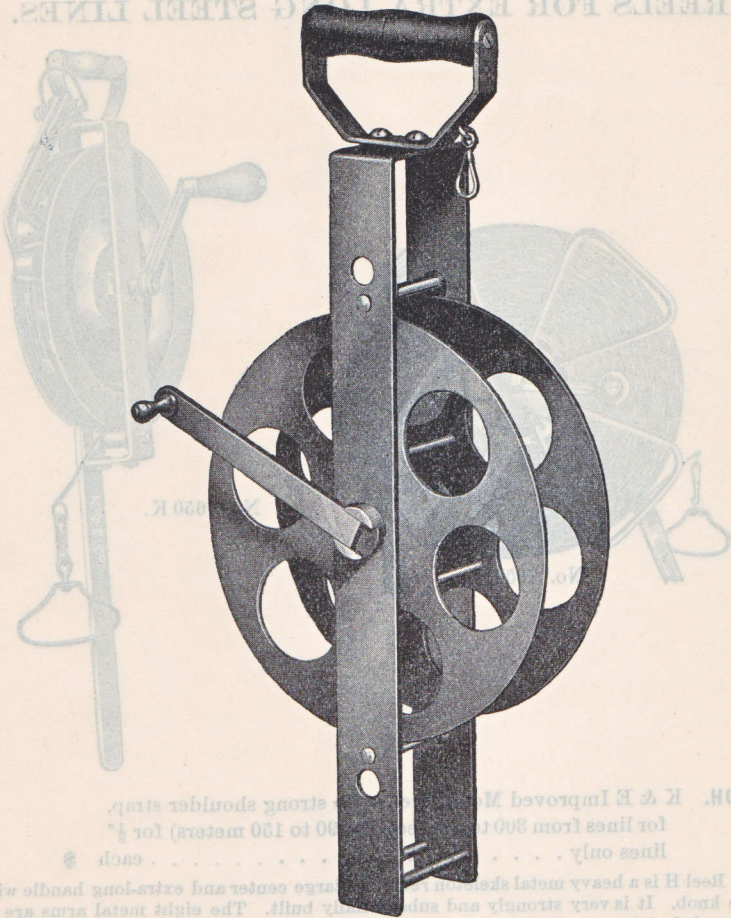
- 7650 C-1. K & E Aluminum Reel with leather strap handle, large center with long folding handle. For lines Nos. 7607 7608 and 7609 (page 39), 100 ft. or 30 meters long. each \$
- 7650 C-2. Similar to No. 7650 C-1, but for lines Nos. 7607 7608 and 7609 (page 39), 200 ft. (or 60 meters) long, and lines Nos. 7610 to 7614 E, inclusive (pages 40 and 41), 100 ft. or 30 meters long. each \$
- 7650 C-3. Similar to No. 7650 C-1, but for lines Nos. 7607 7608 and 7609 (page 39), 300 ft. (or 90 meters) long, and lines Nos. 7610 to 7614 E, inclusive, (pages 40 and 41), 200 ft. (or 60 meters) long. each \$

Please note that these prices are for REELS ONLY. The lines shown in the cuts of these are for better illustration.

When ordering reels separately, please state for which length of line and kind of graduation.



COLORADO STEEL REEL.



This reel is intended for steel tapes from 100 to 500 feet long, up to $\frac{5}{16}$ in. wide. It is substantially built, of steel throughout, with a hardwood supporting handle. For reeling the tape, there is a long folding handle which "locks" into an opening at either end of the frame, and thus prevents the tape from unwinding, when only a part of its length is required.

This is a sturdy reel, and meets a definite need.

7650G-1 Colorado Steel Reel, frame 17 in. long; drum 8 in. in diameter, 2 in. wide; long folding lock handle; for steel tapes 100, 200 and 300 feet long, up to $\frac{5}{16}$ inch wide. . each \$

7650G-5. Same as **7650G-1**, but for tapes 500 feet long

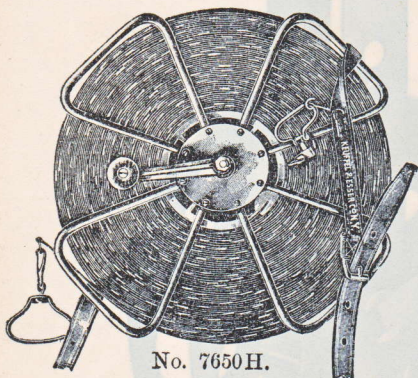
When ordering, please mention kind of tape, also width and length, for which the reel is intended.

KEUFFEL & ESSER CO., NEW YORK

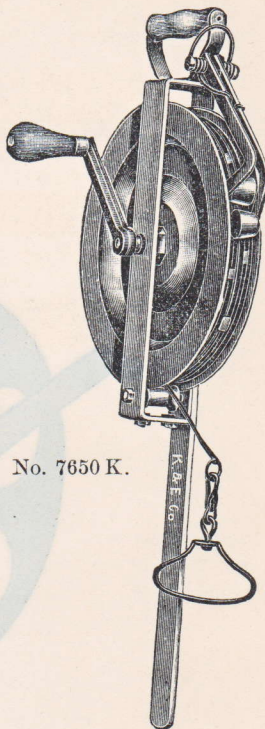
K & E

REG. U. S. PAT. OFF.

REELS FOR EXTRA LONG STEEL LINES.



No. 7650H.



No. 7650 K.

7650H. K & E Improved Metal Reel, with strong shoulder strap,
for lines from 300 to 500 feet, (or 90 to 150 meters) for $\frac{1}{8}$ "
lines only each \$

Reel H is a heavy metal skeleton reel with large center and extra-long handle with large knob. It is very strongly and substantially built. The eight metal arms are so arranged that they preclude kinking of the line during winding and leave the wound line freely exposed to the air for rapid drying and cleaning.

7650 K. Mine Reel, steel, 10 in. diameter, 24 in. over all with arm extended. Spooling controller for distributing the line evenly on the reel when winding. Large roller to mouth piece. Long stout steel crank with hardwood handle. Weight about 5 pounds. **For all flat wire tapes and band chains up to $\frac{5}{8}$ in. wide from 300 to 500 feet long (or 90 to 150 meters long.) each \$**

This reel will be found very convenient for use in mines. It is of steel and very substantially built. The folding steel arm, when extended, supports the reel while winding the tape and is folded across the reel when not required.

Please note that these prices are for REELS ONLY. The lines shown on some of the cuts of the reels are for better illustration.

When ordering reels separately, please state for which length of line and kind of graduation.

K & E

BAND CHAINS



Graduations of **TYPE 1**—Dreadnaught (Babbitted)



Graduations of **TYPE 2**—Riveted, **TYPE 3**—Riveted and Plated.



Graduations of **TYPE 4**—Etched.

Band Chains are intended to be used where the service is too severe for the ordinary types of measuring tapes.

They are made from heavy durable material and the nearly ineffaceable numbers and graduations make them particularly suitable for mining, highway and survey engineers.

Formerly Band Chains, divided into feet, were furnished with the first and last feet more closely subdivided than the remainder of the chain. Now, following the request of leading engineers and surveyors, we are substituting for this method that of adding an **extra foot** outside or before the zero mark and subdividing this so as to read in the opposite direction to the rest of the tape.

On the sides of this page are illustrations showing the manner in which this **extra foot** is added to a hundred foot tape, and subdivided and numbered.

The graduations of the **extra foot** terminate at the marks representing (a) $\frac{9}{10}$ of a foot in **TYPES 1, 2, 3**, and (b) $\frac{99}{100}$ of a foot in **TYPE 4**.

This method presents a decided advantage over the old one; viz:

As formerly subdivided, the reading of the chain, for distances less than its full length, where fractions of a foot were involved, had to be corrected by subtracting one foot from the number of feet actually read. This sometimes lead to errors in recording. With the new method, under exactly the same circumstances, the reading may be made direct without the correction referred to above.

This new method of graduation is recommended as a preventive of error; and all chains divided into feet will be furnished in accordance with it unless otherwise specifically ordered. To those who may prefer the older method, chains with the **first and last feet** subdivided will be made, upon order, without extra charge.

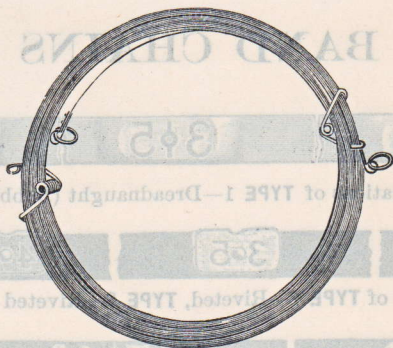
All chains with divisions other than the foot will be furnished with both end divisions subdivided.

Extra
foot

Extra
foot

KEUFFEL & ESSER CO., NEW YORK

K & E BAND CHAINS



Graduations of TYPE 1—Dreadnaught (Babbitted)

TYPE 1—Dreadnaught. Dreadnaught Band Chains are plated with white metal to resist rust and are carefully graduated and plainly numbered on Babbitt metal with—(a) graduation and number marks at every foot, extra foot before zero subdivided to 10ths,

or (b) graduation and number marks at every half meter, end meters subdivided to decimeters.

Dreadnaught Band Chains are of the finest quality and workmanship and retain their efficiency after being subjected to the severest tests. They are well adapted for use in mines as no water nor moisture can enter between the Babbitt metal and the band chain to produce corrosion.

Dreadnaught Band Chains are furnished regularly with rawhide handles, but we will furnish in their place nickelplated detachable handles, without extra charge, if these handles are desired.

7681 B-3. TYPE 1. Dreadnaught Band Chain, $\frac{3}{16}$ in. wide, 100 feet each \$

B-4.	do.	do.	do.	$\frac{1}{4}$ "	"	100 "	"
B-5.	do.	do.	do.	$\frac{1}{8}$ "	"	100 "	"
C-3.	do.	do.	do.	$\frac{3}{16}$ "	"	200 "	"
C-4.	do.	do.	do.	$\frac{1}{4}$ "	"	200 "	"
C-5.	do.	do.	do.	$\frac{5}{16}$ "	"	200 "	"
D-3.	do.	do.	do.	$\frac{3}{16}$ "	"	300 "	"
D-4.	do.	do.	do.	$\frac{1}{4}$ "	"	300 "	"
D-5.	do.	do.	do.	$\frac{5}{16}$ "	"	300 "	"
L.	do.	do.	$\frac{1}{4}$ in. wide,	66 feet (100 links)	"		
B M.	do.	do.	$\frac{1}{4}$ "	"	25 meters,	"	
C M.	do.	do.	$\frac{1}{4}$ "	"	50 "	"	

Furnished on Champion or Ironclad Reels
as indicated on pages 47, 48 and 49.



K & E BAND CHAINS



Graduations of **TYPE 2**—Riveted and **TYPE 3**—Riveted and Plated.

TYPE 2. Riveted. The graduations are marked by rivets at every foot, link or fifth of a meter, **extra foot** subdivided to 10ths, **end meters** to decimeters. Number marks at every meter, 5th foot or 5th link, with additional indicators at every 5th meter, 10th foot or 10th link. The number plates have rounded edges so that they will not catch in obstructions and they are notched to insure correct locating of the plumbing line.

TYPE 2 is a **heavy blued steel ribbon**. It is a reliable and substantial band chain, strong enough for rough work. We furnish these band chains with two rawhide handles.

7682 B. TYPE 2. Riveted Band Chain $\frac{1}{4}$ in. wide, 100 feet each \$

C.	do.	do.	do.	$\frac{1}{4}$ "	"	200 "	"
D.	do.	do.	do.	$\frac{1}{4}$ "	"	300 "	"
L.	do.	do.	do.	$\frac{1}{4}$ "	"	66 "	(100 links) "
BM.	do.	do.	do.	$\frac{1}{4}$ "	"	25 meters	"
CM.	do.	do.	do.	$\frac{1}{4}$ "	"	50 "	"

TYPE 3. Riveted and Plated. Same as **TYPE 2** but **plated with white metal** to resist rust. We furnish these band chains with two rawhide handles.

7683 B. TYPE 3. Riveted and Plated Band Chain $\frac{1}{4}$ in. wide, 100 feet each \$

C.	do.	do.	do.	$\frac{1}{4}$ "	"	200 "	"
D.	do.	do.	do.	$\frac{1}{4}$ "	"	300 "	"
L.	do.	do.	do.	$\frac{1}{4}$ "	"	66 "	(100 links) "
BM.	do.	do.	do.	$\frac{1}{4}$ "	"	25 meters	"
CM.	do.	do.	do.	$\frac{1}{4}$ "	"	50 "	"



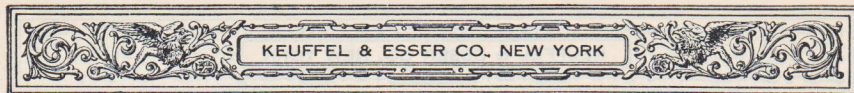
Graduations of **TYPE 4**—Etched

TYPE 4. Etched. KECO finish, etched graduations at every foot or link, **extra foot** subdivided to 10ths and 100ths. The graduations are etched in a manner which insures permanence in rough work. We furnish these band chains with two rawhide handles.

7684 B. TYPE 4. Etched Band Chain $\frac{1}{4}$ in. wide, 100 feet each \$

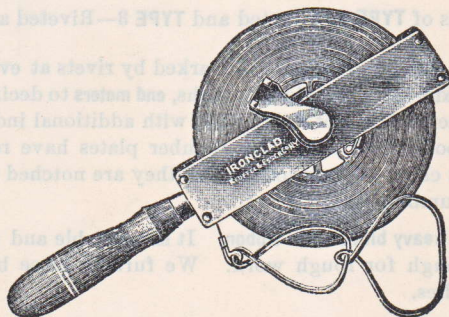
C.	do.	do.	do.	$\frac{1}{4}$ "	"	200 "	"
D.	do.	do.	do.	$\frac{1}{4}$ "	"	300 "	"
L.	do.	do.	do.	$\frac{1}{4}$ "	"	66 "	(100 links) "

K & E Band Chains are furnished on
Champion and Ironclad Reels as indicated on pages 49, 50 and 51.



K & E
REG. U. S. PAT. OFF.

BAND CHAINS ON IRONCLAD REELS



The **IRONCLAD** Reel is of most substantial construction. This very practical reel consists of two strong steel plates, $1\frac{1}{2}$ in. wide, carrying a large center (for quick and easy winding) with extra-long folding brass handle. The width of the side plates prevents tangling of the line in reeling or unreeling. All metal parts of the reel are heavily nickelplated. The lines are furnished with two nickelplated handles.



Graduations of **TYPE 1**—Dreadnaught (Babbitted)
Made in $\frac{1}{4}$, $\frac{5}{16}$ in. widths.

7691 B-4. K & E Band Chain, TYPE 1 —Dreadnaught (Babbitted) line						
	on Ironclad reel	$\frac{1}{4}$	in. wide,	100 ft.	each	\$
B-5.	"	"	"	$\frac{5}{16}$	"	100 " "
C-4.	"	"	"	$\frac{1}{4}$	"	200 " "
C-5.	"	"	"	$\frac{5}{16}$	"	200 " "
L.	"	"	"	$\frac{1}{4}$	"	66 " (100 links) "

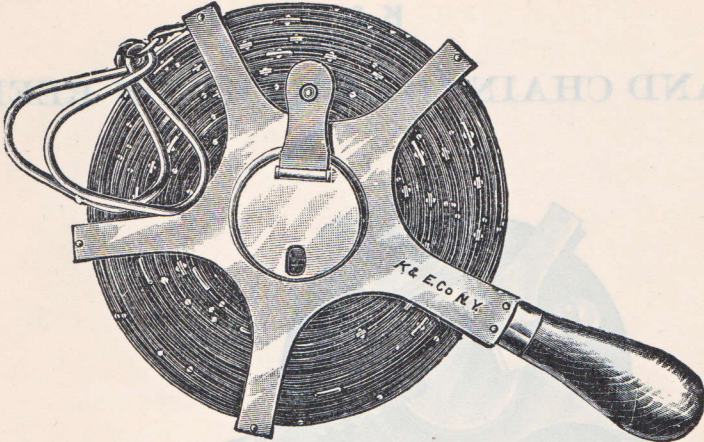


Graduations of **TYPE 4**—Etched

7694 B. K & E Band Chain, TYPE 4 —Etched line on Ironclad reel,						
			$\frac{1}{4}$	in. wide,	100 ft.,	each \$
C.	do.	do.	do.	$\frac{1}{4}$ " " do.	200 ft.,	"



K & E BAND CHAINS ON CHAMPION REELS



The **CHAMPION** Reel is of stout metal, nickelplated, with polished wooden handle. The five metal arms on the reel are so arranged that they hold even the longest chains in position without overlapping. The large center gives durability and with the long handle provides leverage for easy winding.

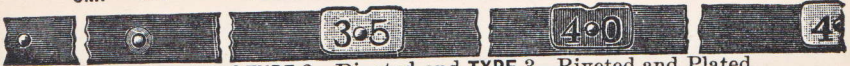
CHAMPION Reels are intended to take Band Chains $\frac{1}{4}$ in. wide only.

The lines are furnished with two nickelplated and two rawhide handles.



Graduations of **TYPE 1**—Dreadnaught (Babbitted).

7701 B. K & E Band Chain TYPE 1 —Dreadnaught (Babbitted) line,					on Champion reels,	100 feet . . . each \$
C.	do.	do.	do.	do.	200	" . . . "
D.	do.	do.	do.	do.	300	" " "
L.	do.	do.	do.	do.	66	" (100 links) "
BM.	do.	do.	do.	do.	25	meters "
CM.	do.	do.	do.	do.	50	" "



Graduations of **TYPE 2**—Riveted and **TYPE 3**—Riveted and Plated.

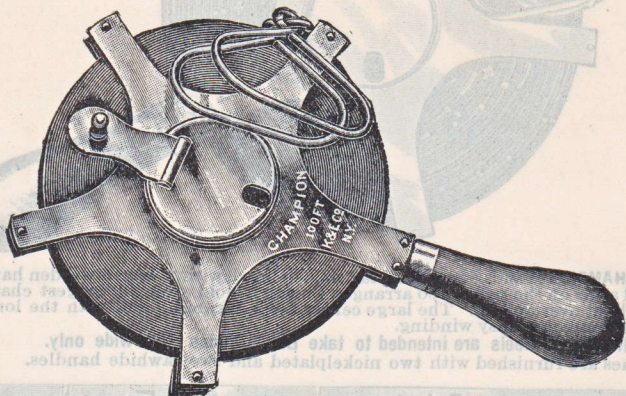
7702 B. K & E Band Chain Type 2—Riveted line, on Champion reels					100 feet . . . each \$
C.	do.	do.	do.	do.	200 " . . . "
D.	do.	do.	do.	do.	300 " . . . "
L.	do.	do.	do.	do.	66 " (100 links) "
BM.	do.	do.	do.	do.	25 meters "
CM.	do.	do.	do.	do.	50 " "

7703 B. K & E Band Chain TYPE 3—Riveted and Plated line, on Champion reels					100 feet . . . each	\$
C.	do.	do.	do.	do.	200	" . . . "
D.	do.	do.	do.	do.	300	" " "
L.	do.	do.	do.	do.	66	"(100 links) "
BM.	do.	do.	do.	do.	25	meters "
CM.	do.	do.	do.	do.	50	" "

K & E

REG. U. S. PAT. OFF.

BAND CHAINS ON CHAMPION REELS



(5.3) (5.4) (5.5)

Graduations of TYPE 4—Etched.

7704B. K & E Band Chain TYPE 4—Etched line.

C.	do.	do.	do.	do.	200	"	"	"	"
D.	do.	do.	do.	do.	300	"	"	"	"
L.	do.	do.	do.	do.	66	"	(100 links)	"	"

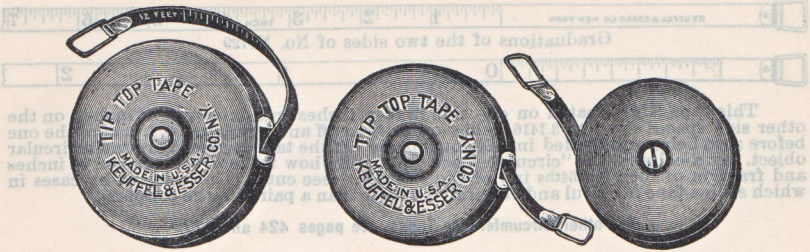


TIP TOP POCKET TAPES,

REG. U. S. PAT. OFF.

KECO Finish.

Nickelplated Cases.



No. 7714TF (front)

7711 (front)

7710 (back)

STEEL POCKET TAPES. SPRING WINDING.

TIP TOP Steel Pocket Tapes, 1/4 in. wide, nickelplated case, spring winding, with stop at center. Graduations begin on the line.

Length in Inches.	36	60	72	96
Inches to 16ths (one side)	7710 T	7711 T	7712 T	7713 T
	each \$			

Length in feet.	3	5	6	8	12
Feet to 100ths . . . No.	7710 D	7711 D	7712 D	7713 D	7714 D
(one side).	each \$				

Length in Meters.	1	1½	2	2½
Inches to 16ths, other side No.	7710 TM	7711 TM	7712 TM	7713 TM
millimeters, each \$				

Length in Meters.	3½
Feet to Inches to 16ths, other side No.	7714 TFM
side to millimeters, each \$	

Tip Top Steel Pocket Tapes with scale. Length 60 inches.

No. 7711 A.	Scale ½ in. to the foot,	other side scale ¼ in. to the foot	each \$
No. 7711-4.	Inches to 16ths,	other side Scale ¼ in. to the foot,	each \$
No. 7711-8.	“ “ “	other side Scale ½ in. to the foot,	“

LINEN POCKET TAPES.

TIP TOP Linen Pocket Tapes, 1/4 in. wide, nickelplated case, spring winding, with stop at center.

Length in inches.	36	60	72	96
Inches to 16ths (one side) . . . No.	7720 T	7721 T	7722 T	7723 T
	each \$			

No. 7723 TF.	Feet to inches in 16ths (one side).	Length 8 feet.	each \$
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THE LENGTH OF THESE TAPES IS MARKED ON THE LINE BEFORE THE ZERO POINT.

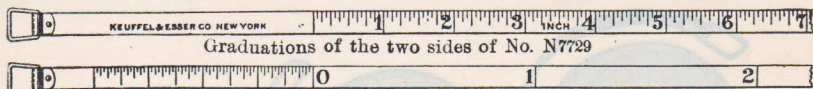
KEUFFEL & ESSER CO., NEW YORK

K & E STEEL TAPES.

KECO Finish.

For reading diameter opposite circumference (π Tapes.)

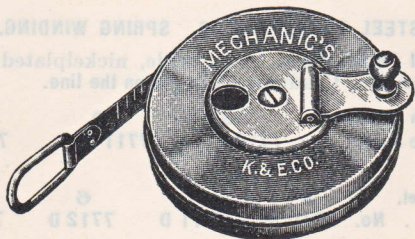
N7729. K & E Steel Pocket Tape, 1/4 in. wide, Tip Top, nickel-plated case, spring winding, with stop, 12 feet . . . each \$



This tape is graduated on one side in feet, inches and sixteenths of inches; on the other side spaces equal to 3.1416 inches are marked off and numbered 0, 1, 2, etc., the one before zero being subdivided into 64 equal parts. If the tape is passed around a circular object, say a column, the "circumference" side will show the correct number of inches and fraction of inch (to 64ths in.) of the diameter. (see cut). There are many cases in which such a tape is useful and certainly handier than a pair of large calipers.

For other Circumference Tapes, see pages 424 and 429.

K & E MECHANIC'S STEEL TAPES.



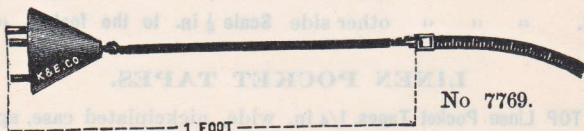
Please order
by number.

K & E Mechanic's Steel Tapes, KECO finish, 3/8 in. wide, nickelplated metal case, large center with long folding handle, graduations begin on the line.

Length in feet,	10	15	20
Feet in inches, (to 16ths inches).	No. 7760½	7761½	7762
each \$			

The **K & E Mechanic's Steel Tapes** are of practical construction. As they are very accurate, as compared with a woven tape, finely subdivided and of moderate cost, they will often be preferred to the less reliable woven tapes or folding rules. They will stand rough handling and will not be injured by knocking about in a tool chest.

SOUNDING ATTACHMENT FOR TAPES.



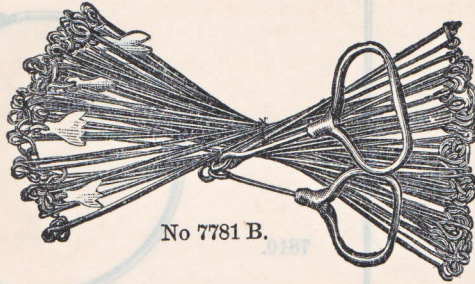
7769. Sounding Attachment for Tapes each \$

This attachment for measuring the depth of oil in tanks, etc., consists of a heavy conical weight with 3 short feet, attached by a ring to a short piece of tape line which ends in a stout snap hook. It can be used with any tape with graduations beginning at end of ring; it is only necessary to add 1 foot to the reading of the tape to obtain correct measurement, as the attachment is exactly one foot long.

If the Sounding Attachment and the tape are ordered together, we can furnish the tape to read actual measurement, if so desired.



MEASURING CHAINS.



No 7781 B.

STEEL, U. S. STANDARD.

7780A.	Steel, W. G. 12,	Brass Handles, oval rings,	50 feet	each \$
7780B.	do. " " 12,	" " " " 100 "	"	
7780C.	do. " " 12,	" " " " 33 " (50 Links) "		
7780D.	do. " " 12,	" " " " 66 " (100 Links) "		
7781A.	do. " " 12,	" " brazed links and rings, 50 feet	"	
7781B.	do. " " 12,	" " " " 100 " "		
7781C.	do. " " 12,	" " " " 33 " (50 Links)		
7781D.	do. " " 12,	" " " " 66 " (100 Links)		

Chain No. 7781 B has a spring hook (snap) at 50 feet, so that it can be separated there and the handle attached for using it as a 50-foot chain.

STEEL, METER AND VARA.

7782A.	Steel, W. G. 12,	Brass Handles, oval rings, 10 meters . .	each \$
7782C.	do. " " 12,	" " " " 20 "	"
7783A.	do. " " 12,	" " brazed links and rings, 10 meters"	
7783C.	do. " " 12,	" " " " 20 " "	
7783D.	do. " " 12,	" " " " 25 " "	
7785A.	do. " " 12,	" " brazed links and rings, 10 Varas "	
7785B.	do. " " 12,	" " " " 20 " "	

The Vara Chains are in Mexican Varas (833 mm.). Chains in Varas of other Standards furnished to order.

IRON, U. S. STANDARD.

7786A.	Iron, W. G. 8,	Brass Handles, 2 round rings, 50 feet . . .	each \$
7786B.	do. " " 8,	" " 2 " " 100 "	"
7786C.	do. " " 8,	" " 2 " " 33 " (50 Links) "	
7786D.	do. " " 8,	" " 2 " " 66 " (100 Links) "	

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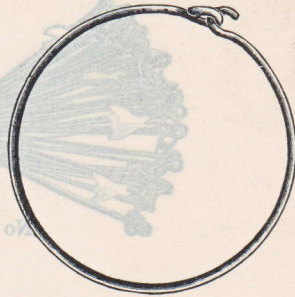
ARROWS.



No. 7809.



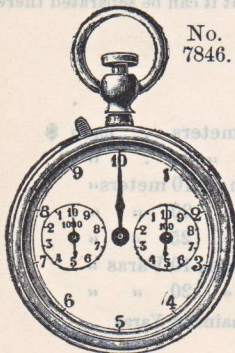
7810.



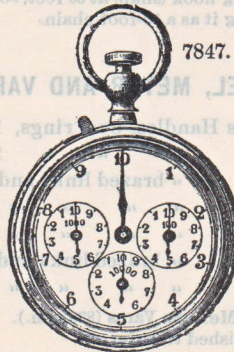
7825.

- 7809.** Wrought Steel Arrows. Red Enameled. 15 in., set of 11 \$
 Arrows No. 7809 are of tempered wrought steel, extra heavy, and useful on hard ground.
- 7810.** Steel Arrows, W. G. 6, nickelplated 14 in., set of 11 \$
- 7811.** do. do. " " 9, do. 14 " " " 11 \$
- 7812.** do. do. " " 9, red enameled 12 " " " 11 \$
- 7813.** do. do. " " 11, nickelplated 12 " " " 11 \$
- 7815.** Iron do. " " 9, 14 " " " 11 \$
- N7820.** Leather Quiver with belt loop for set of 11 arrows. "
- 7825.** Spring Steel Carrying Ring for arrows "
- When ordering No. 7820, state for which catalogue number of arrows.

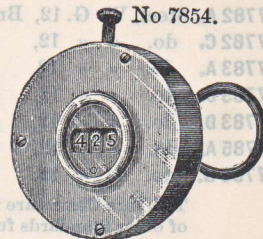
TALLYING MACHINES.



No.
7846.



7847.



No 7854.

- 7846.** Tallying Machine, for keeping count by pressing on a knob, nickelplated watch case, porcelain dial, 3 numbered dials, registers to 1000, with lever for setting hands to zero. . each \$
- 7847.** Tallying Machine, like No. 7846, but with 4 numbered dials, registers to 10,000. each \$
- N7854.** Tallying Machine, for keeping count by pressing on a knob, nickelplated, registers to 999, arranged to set back to zero, in morocco finish case each \$
- 7854X.** Tallying Machine, like No. 7854 but registering to 9999, . . each \$



STEEL AND MERCURY PLUMB BOBS.



No. 6492 B.
to 6493 B.



N6490

6488. Plain Iron Plumb Bob about 7 oz. doz. \$

6492 B. Fine Solid Steel Plumb Bob, nickelplated, with screw cap,
about 6 oz., 5 in. long, $\frac{1}{16}$ in. diam., each. \$

6493 B. Fine Steel Plumb Bob, nickelplated, with screw cap, loaded with
mercury, about 8 oz. 5 in. long, $\frac{1}{16}$ in. diam., each \$

Plumb Bobs Nos. 6492B and 6493B are made of steel rod. Their small diameter permits of their use close to walls or other surfaces and prevents their being readily swayed by the wind. The No. 6493B is hollow and filled with mercury, which makes it very heavy for its size, and brings the center of gravity nearer to the point of the bob.

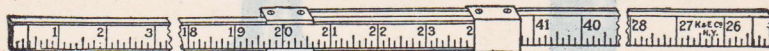
STANDARD PLUMB BOBS.

N6490.	4 ounces, brass, screw cap, steel point	each \$
6	" " " " " " " " " " " "	"
8	" " " " " " " " " " " "	"
10	" " " " " " " " " " " "	"
12	" " " " " " " " " " " "	"
14	" " " " " " " " " " " "	"
18	" " " " " " " " " " " "	"
24	" " " " " " " " " " " "	"

KEUFFEL & ESSER CO., NEW YORK

EXTENSION MEASURES.

Door and window frames, heights of ceilings, etc., can be measured readily and accurately with these useful rules. They can be quickly extended within a window or other opening to the exact distance between any two points, and can be CLAMPED so that they will maintain the length to which they have been extended. The extension rule can be used between points not accessible for measuring with a tape.



No. 1699.

- | | |
|---------|----------------------------------------------------------------|
| 1699 A. | Extension Measure, 2 feet, 2 fold extending to 4 feet, each \$ |
| 1699 B. | do. 3 " 2 " " " 6 " " |
| 1699 C. | do. 4 " 2 " " " 8 " " |
| 1699 D. | do. 5 " 2 " " " 10 " " |

Extension Measures No. 1699 A to D are of hardwood with brass trimmings. Readings are taken opposite the end of the first section for all measurements beyond the first section. They are graduated in feet, inches and eighths of inches, and are provided with a clamping device.

SHRINKAGE RULES.

ENGINE DIVIDED.



No. 1701.

These Shrinkage Rules are of hardwood, brass tipped, both sides divided, about $\frac{1}{8}$ in. wide by $\frac{1}{8}$ in. thick and divided into eighths, tenths, twelfths and sixteenths inches. They are superior to all others in quality, accuracy and finish.

- | | | | | | |
|----------------------|-----------------|------------------|----------|-----------------------------|---------|
| 1700. | Shrinkage Rule, | $24\frac{2}{10}$ | = 24 in. | (1 foot = 12.1 in.) | each \$ |
| 1701. | do. | $24\frac{1}{4}$ | = 24 " | (1 " = $12\frac{1}{8}$ in.) | " |
| 1701 $\frac{1}{2}$. | do. | $24\frac{3}{8}$ | = 24 " | (1 " = $12\frac{3}{8}$ in.) | " |
| 1702. | do. | $24\frac{1}{2}$ | = 24 " | (1 " = $12\frac{1}{4}$ in.) | " |
| 1702 $\frac{1}{2}$. | do. | $24\frac{5}{8}$ | = 24 " | (1 " = $12\frac{5}{8}$ in.) | " |
| 1704. | do. | $25\frac{1}{2}$ | = 24 " | (1 " = $12\frac{3}{4}$ in.) | " |
| 1705. | do. | 26 | = 24 " | (1 " = 13 in.) | " |

1701 for Cast iron. 1701 $\frac{1}{2}$ Brass and Aluminum. 1702 Steel.
1702 $\frac{1}{2}$ Zinc and Lead.

Note: Engine divided rules, with special graduations, furnished to order.

HANDY SHRINKAGE RULES.

- | | | | | | |
|-------|-----------------------|------------------|----------|-----------------------------|-------------|
| 1710. | Handy Shrinkage Rule, | $24\frac{2}{10}$ | = 24 in. | (1 foot = 12.1 in.) | per doz. \$ |
| 1711. | do. | $24\frac{1}{4}$ | = 24 " | (1 " = $12\frac{1}{8}$ in.) | " |
| 1712. | do. | $24\frac{3}{8}$ | = 24 " | (1 " = $12\frac{3}{8}$ in.) | " |
| 1713. | do. | $24\frac{1}{2}$ | = 24 " | (1 " = $12\frac{1}{4}$ in.) | " |

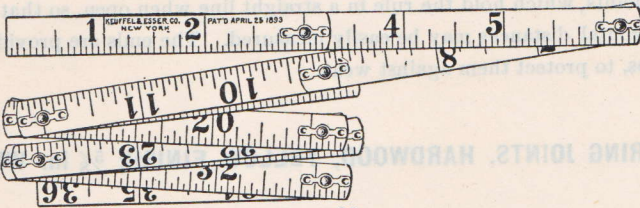
Rules for any other shrinkage made to order. Prices on application.



K & E FOLDING STEEL POCKET RULES.

KECO Finish.

SPRING JOINTS.



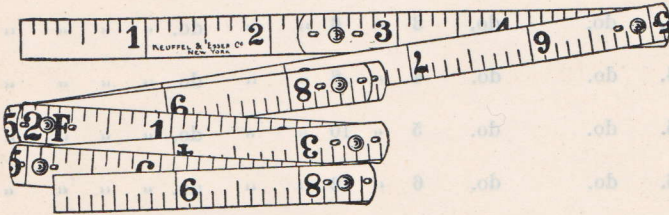
No. 1727.

These Rules are made of carefully tempered spring steel, $\frac{3}{8}$ in. wide and graduated on both sides. They fold up smaller than any other rule; the 12-fold three-foot rule is only $\frac{3}{8}$ in. thick X $3\frac{3}{8}$ in. long when folded.

The divisions are sharp and accurate and the numbering is very distinct. It runs in opposite directions on the two sides. The aligning springs at the joints hold the rule in a rigid straight line when it is opened, without in any way interfering with folding it.

Divided $\frac{1}{16} \times \frac{1}{16}$ in.

- | | | | |
|-------|---------------------------------------------------------------------------------------|------|----|
| 1725. | K & E Steel Pocket Rule, 1 foot, 4 fold, div. $\frac{1}{16} \times \frac{1}{16}$ in., | each | \$ |
| 1726. | " " " " 2 " 8 " " do. " " | | |
| 1727. | " " " " 3 " 12 " " do. " " | | |



No. 1727 D. (100ths-foot side.)

Divided: $\frac{1}{16}$ in. \times $\frac{1}{100}$ ft.

- | | | | |
|---------|-----------------------------------------------------------------------------------------|------|----|
| 1725 D. | K & E Steel Pocket Rule 1 foot, 4 fold, $\frac{1}{16}$ in. \times $\frac{1}{100}$ ft. | each | \$ |
| 1726 D. | " " " " 2 " 8 " do. do. " " | | |
| 1727 D. | " " " " 3 " 12 " do. do. " " | | |

As the rules 1725 D to 1727 D have one side divided to 10ths and 100ths of a foot, they are useful to the Civil Engineer in connection with measuring with tapes or band chains. The numbering on these rules begins at the same end on both sides.

Divided: $\frac{1}{16}$ in. \times mm.

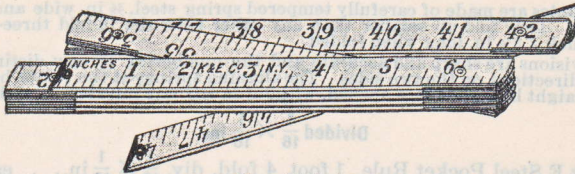
- | | | | |
|-------|-------------------------------------------------|------|----|
| 1728. | K & E Steel Pocket Rule, metric, 3 foot 12 fold | each | \$ |
| | Leather Sheaths for 1725, 1726, 1725 D, 1726 D. | | |
| | " " " 1727, 1727 D, 1728. | | |



K & E FOLDING WOOD POCKET RULES.

All K & E Folding Wood Pocket Rules are provided with ingenious spring joints, which hold the rule in a straight line when open, so that vertical or horizontal distances may be easily measured. The ends are provided with metal tips, to protect them against wear.

SPRING JOINTS, HARDWOOD, YELLOW FINISH; $\frac{5}{8}$ in. WIDE.



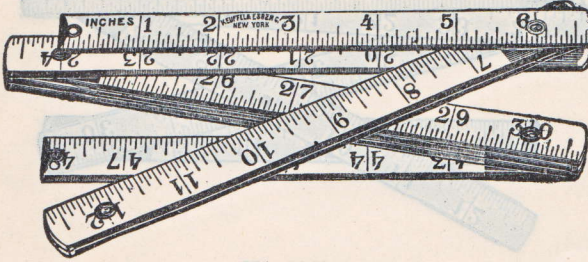
No. 1730-4.

												\$	\$
												doz.	each
1730-2.	K & E Pocket Rule, 2 feet, 4 fold, div. $\frac{1}{16} \times \frac{1}{16}$ in., metal tips												
1730-3.	do.	do.	3	"	6	"	"	do.	"	"	"	"	"
1730-4.	do.	do.	4	"	8	"	"	do.	"	"	"	"	"
1730-5.	do.	do.	5	"	10	"	"	do.	"	"	"	"	"
1730-6.	do.	do.	6	"	12	"	"	do.	"	"	"	"	"
1730-8.	do.	do.	8	"	16	"	"	do.	"	"	"	"	"
1730-5F.	K & E Pocket Rule, numbered feet and inches,												
	5 feet, 10 fold, div. $\frac{1}{16} \times \frac{1}{16}$ in.,												
1730-6F.	do.	do.	6	"	12	"	"	do.	"	"	"	"	"
1730-4D.	K & E Pocket Rule, 4 feet, 8 fold, div. $\frac{1}{16}$ in. \times $\frac{1}{100}$ ft.,												
1730-6D.	do.	do.	6	"	12	"	"	do.	"	"	"	"	"
1732-4 M.	do. metric	do.	4	"	8	"	"	$\frac{1}{16}$ in. \times mm.	"	"	"	"	"



K & E FOLDING WOOD POCKET RULES.

SPRING JOINTS, HARDWOOD, WHITE FINISH; $\frac{5}{8}$ IN. WIDE.



No. 1740-4.

1740-2 to 1742-4-M, K & E Folding Pocket Rules have a white finish on which the black graduations and figures are much more distinct and legible than on the yellow rules.

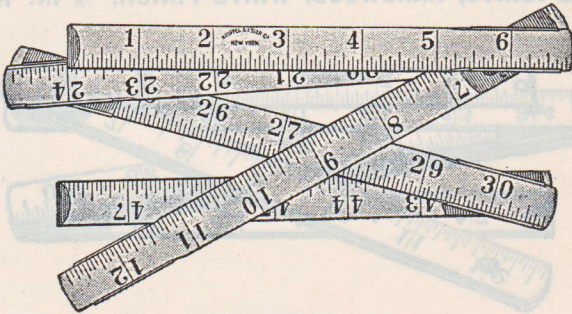
1740-2.	White Pocket Rule, 2 ft., 4 fold, div. $\frac{1}{16} \times \frac{1}{16}$ in., metal tips, doz. each \$
1740-3.	do. do. do. 3 " 6 " " do. " " " " "
1740-4.	do. do. do. 4 " 8 " " do. " " " " "
1740-5.	do. do. do. 5 " 10 " " do. " " " " "
1740-6.	do. do. do. 6 " 12 " " do. " " " " "
1740-8.	do. do. do. 8 " 16 " " do. " " " " "
1740-4D.	do. do. do. 4 " 8 " " $\frac{1}{16}$ in. $\times \frac{1}{100}$ ft. " " "
1740-6D.	do. do. do. 6 " 12 " " do. do. " " "
1742-4M.	do. do. metric, 4 " 8 " " $\frac{1}{16}$ in. \times mm. " " "



K & E FOLDING WOOD POCKET RULES.

SPRING JOINTS, HARDWOOD, YELLOW FINISH; $\frac{5}{8}$ IN. WIDE.

Concealed Rivets



No. A 1730-4.

A 1730-2 to A 1732-4M. K & E Folding Wood Pocket Rules are heavier and stiffer than those shown on pages 59 and 60 and have concealed rivets at the joints.

A 1730-2. K & E Pocket Rule, 2 feet, 4 fold, div. $\frac{1}{16} \times \frac{1}{16}$ in. Metal tips doz. \$

A 1730-3. do. do. 3 " 6 " " do. " " " "

A 1730-4. do. do. 4 " 8 " " do. " " " "

A 1730-5. do. do. 5 " 10 " " do. " " " "

A 1730-6. do. do. 6 " 12 " " do. " " " "

A 1730-8. do. do. 8 " 16 " " do. " " " "

A 1730-5F. K & E Pocket Rule, numbered feet and inches,

5 feet, 10 fold, div. $\frac{1}{16} \times \frac{1}{16}$ in.,

A 1730-6F. do. do. 6 " 12 " " do. " " " "

A 1730-4D. K & E Pocket Rule, 4 feet, 8 fold, div. $\frac{1}{16}$ in. $\times \frac{1}{100}$ ft., " "

A 1730-6D. do. do. 6 " 12 " " do. " " " "

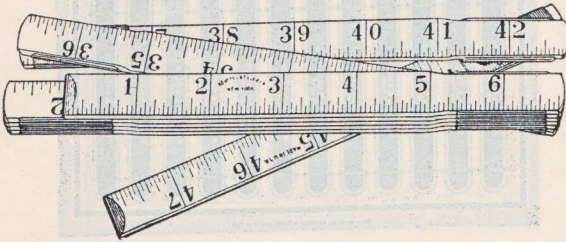
A 1732-4 M. do. metric do. 4 " 8 " " $\frac{1}{16}$ in. \times mm. " "



K & E FOLDING WOOD POCKET RULES.

SPRING JOINTS, HARDWOOD, WHITE FINISH; $\frac{5}{8}$ IN. WIDE.

Concealed Rivets



1730-4 W.

1730-2 W to 1732-4MW. are heavier and stiffer than those shown on pages 59 and 60 and have concealed rivets at the joints.

1730-2W. White Pocket Rule, 2 feet, 4 fold, div. $\frac{1}{16} \times \frac{1}{16}$ in. metal tips, each \$

1730-3W. do. do. 3 " 6 " " do. " " " "

1730-4W. do. do. 4 " 8 " " do. " " " "

1730-5W. do. do. 5 " 10 " " do. " " " "

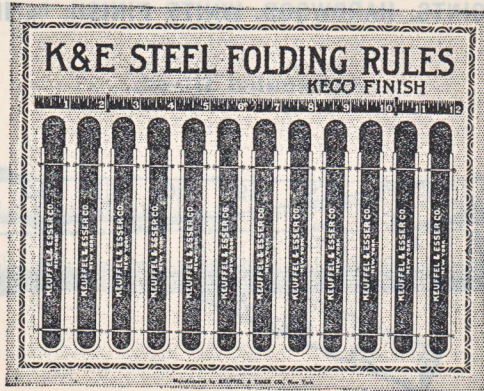
1730-6W. do. do. 6 " 12 " " do. " " " "

1730-8W. do. do. 8 " 16 " " do. " " " "

1730-4DW. do. do. 4 " 8 " " $\frac{1}{16}$ in. \times $\frac{1}{100}$ ft., " " " "

1730-6DW. do. do. 6 " 12 " " do. do. " " " "

1732-4MW. do. do. metric 4 " 8 " " $\frac{1}{16}$ in. \times mm., " " " "



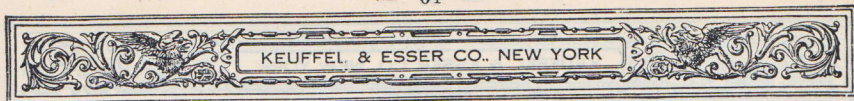
No. 1724

This pleasing Display Card, holding one dozen K & E Steel Folding Rules (one foot long) in leather sheaths, has been designed to enable the Dealer to make an attractive display of these Rules, which are proving a ready seller, as "EVERYBODY" can use them.

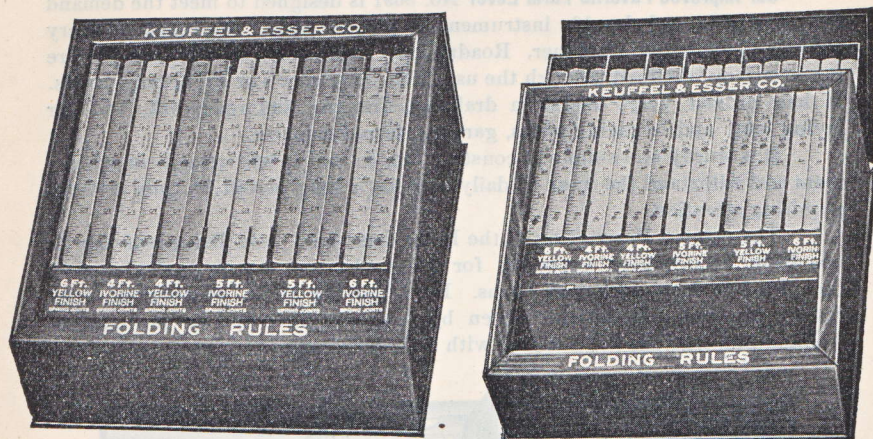
K & E Steel Folding Rules are made of carefully tempered spring steel 1 ft. long, folding to 6 in., $\frac{3}{8}$ in. wide and graduated to inches and 16ths. They are provided with a strong spring joint which keeps the two sections in perfect alignment when unfolded.

The graduations are clear and distinct, the rules being finished with our well-known "Keco Finish," which produces a black background with bright steel graduations and figures.

1724. Card of 1 dozen Rules and Sheaths



FOLDING RULE DISPLAY CASE No. 40



We will furnish to dealers the very attractive metal display case shown in the above illustrations, with an order of not less than one gross of assorted folding rules. The face of the case is 11 × 11 in. The depth increases from 3½ in. at the lower end to 6½ in. at the upper end.

The illustration on the right shows how the case is opened for removal of the rules:— The tray containing the rules is attached to a crossbar on the door shown at the back of the case. This door is provided with a handle and turns about hinges at its lower end. When the door is pulled open the tray is drawn out of the case so that the rules are easily accessible.

The case contains 6 of each of the following types of rules, all of hardwood and with spring joints:—

Yellow Finish

1730-4. Length 4 ft. 8 fold, $\frac{1}{16}$ in. wide, div. $\frac{1}{16} \times \frac{1}{16}$ in. metal tips.

1730-5. “ 5 “ 10 “ “ “ “ “ “ “

1730-6. “ 6 “ 12 “ “ “ “ “ “ “

Ivory Finish

1740-4. Length 4 ft. 8 fold, $\frac{1}{16}$ in. wide, div. $\frac{1}{16} \times \frac{1}{16}$ in. metal tips.

1740-5. “ 5 “ 10 “ “ “ “ “ “ “

1740-6. “ 6 “ 12 “ “ “ “ “ “ “

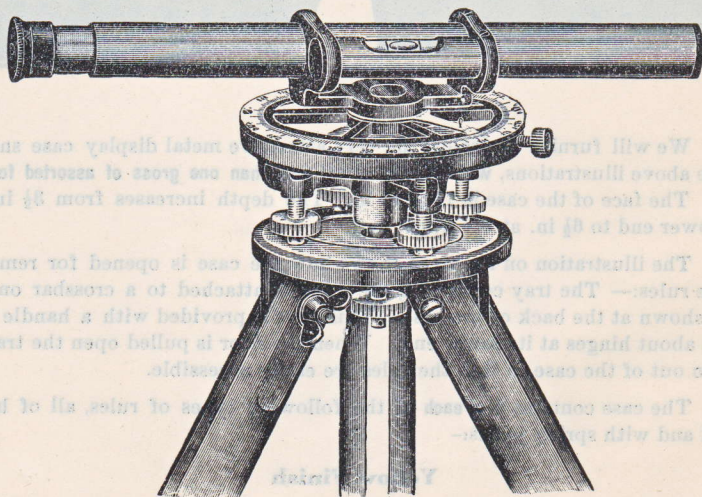
KEUFFEL & ESSER CO., NEW YORK

FAVORITE FARM LEVEL.

Our Improved Favorite Farm Level No. 5691 is designed to meet the demand for a reliable and durable instrument at a price within the reach of every Farmer, Landscape Gardener, Roadmaker, and others who do not require the accuracy obtained through the use of the Engineer's or Architect's levels. It has proved very useful in draining, ditching and roadwork, and for laying out and terracing parks, gardens, farm lands, etc.

It is sturdy and simple in construction, so that it will remain in adjustment and withstand the wear of daily use for a long period of time without requiring attention.

The printed Description of the Instrument and plain Directions for its use have been written expressly for those who are not surveyors; hence, they are free from technical terms. By following these instructions, good results can easily be obtained even by those who have had no professional training and who are not familiar with land surveying.



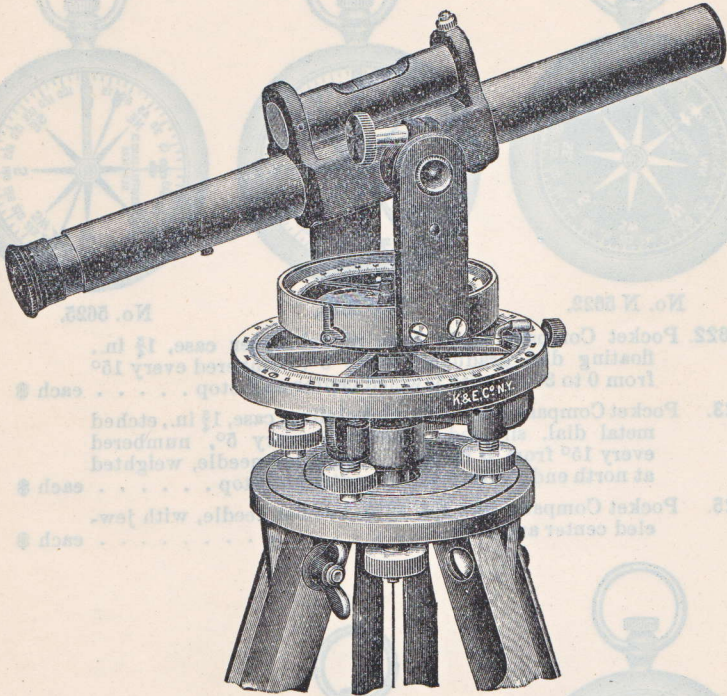
No. 5691.

- 5691. Favorite Farm Level.** Telescope 10 in., with good lenses, showing objects erect; Magnifying Power about 8 diameters; with vertical and horizontal cross-hairs; spirit level to telescope, graduated on the glass; telescope revolves in horizontal plane only. Horizontal circle graduated to single degrees and numbered from 0 to 360 degrees, with clamp-screw against horizontal motion; revolving arm with index. Instrument complete in wooden box with plumb-bob; wooden leveling rod 8 ft. long in two 4 ft. lengths, divided into feet, inches and quarter inches, with target; split leg tripod, and directions . . . each \$



FAVORITE FARM TRANSIT LEVEL

with Tilting Telescope and with Compass.



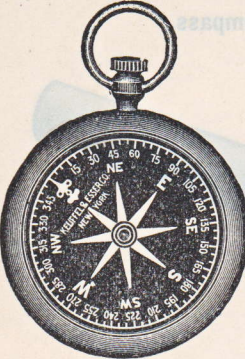
No. 5694.

- 5694. Favorite Farm Transit-Level** with Tilting Telescope and Compass. Telescope 10 in., with good lenses; showing objects erect; Magnifying Power about 8 diameters; vertical and horizontal cross-hairs; with clamp-screw to lock against vertical motion; and spirit-level. Horizontal circle graduated to degrees and numbered from 0 to 360 degrees; with clamp-screw locking against horizontal motion; revolving arm with index. Compass Needle about $2\frac{1}{2}$ in., with locking device; compass circle graduated to degrees in 4 quadrants of 90° each. Instrument complete in wooden box, with lockhooks and metal handle; plumb bob; 6 ft. Flexible Leveling Rod No. 6335 S; split tripod, and directions. each \$

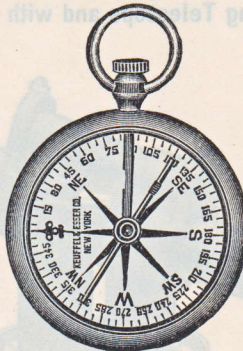
KEUFFEL & ESSER CO., NEW YORK

POCKET COMPASSES.

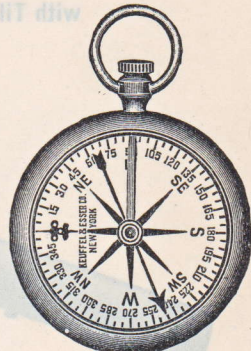
WATCH PATTERN, OPEN FACE.



No. N 5622.

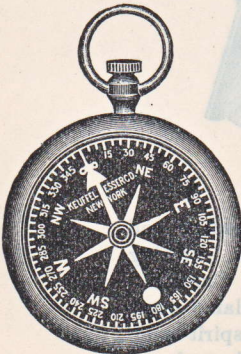


No. 5623.

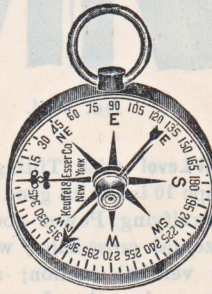


No. 5625.

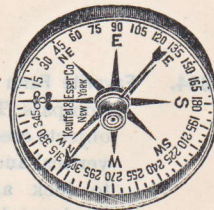
- * N 5622. Pocket Compass, open face, nickel silver case, $1\frac{3}{4}$ in., floating dial graduated every 5° , numbered every 15° from 0 to 360° ; with jeweled center and stop each \$
- 5623. Pocket Compass, open face, nickel silver case, $1\frac{3}{4}$ in., etched metal dial, silvered, graduated every 5° , numbered every 15° from 0 to 360° . Edge bar needle, weighted at north end; with jeweled center and stop each \$
- 5625. Pocket Compass, like No. 5623, but flat needle, with jeweled center and stop each \$



No. N 5622 R.



No. 5628.



No. 5629.

- N 5622 R. Pocket Compass, like No. N 5622, but with radium luminous indicators for night observation each \$
- 5628. Pocket Compass, open face, $1\frac{3}{8}$ in., with knob and ring, black finish, card dial graduated every 5° , numbered every 15° from 0 to 360° . Flat needle without stop; jeweled center. each \$
- 5629. Pocket Compass, like No. 5628, but without knob and ring, each \$

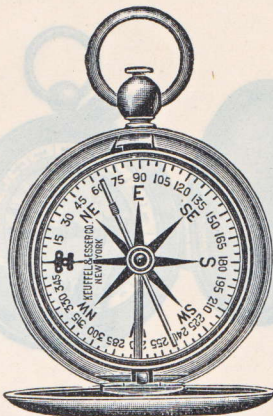
KEUFFEL & ESSER CO., NEW YORK

POCKET COMPASSES.

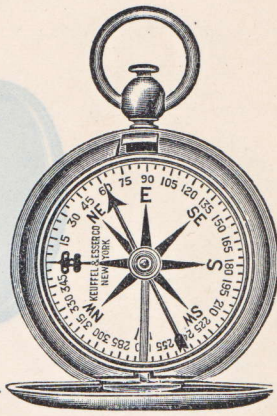
Watch Pattern, Hunting Case.



No. 5612.

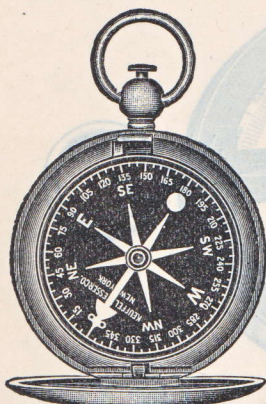


No. 5613.

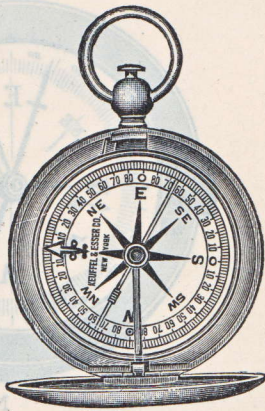


No. 5615.

5612. Pocket Compass, nickel silver, watch-pattern hunting case, $1\frac{1}{2}$ in., floating dial graduated every 5° , numbered every 15° from 0 to 360° . Jeweled center and stop each \$
5613. Pocket Compass, nickel silver, watch-pattern hunting case; $1\frac{1}{2}$ in., etched metal dial silvered and graduated every 5° , numbered every 15° from 0 to 360° . Edge-bar needle, weighted at north end, with jeweled center and stop each \$
5615. Pocket Compass, like No. 5613, but flat needle, with jeweled center and stop each \$



No. 5612 R.

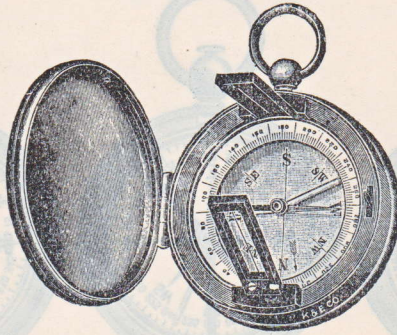


No. 5613 R.

- 5612 R. Pocket Compass, like No. 5612, but with radium luminous indicators for night observation each \$
- 5613 R. Pocket Compass, nickel silver, watch-pattern hunting case, $1\frac{1}{2}$ in., metal dial, silvered, and graduated every 2° , numbered in quadrants every 10° . Edge-bar needle, weighted at end; with jeweled center and stop. Radium luminous indicators for night observation. each \$

KEUFFEL & ESSER CO., NEW YORK

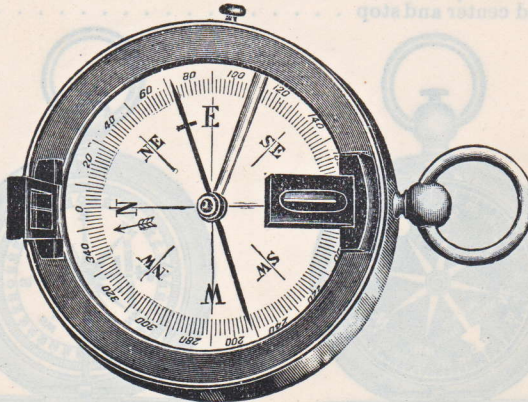
SIGHT COMPASSES.



No. 5446

5446. Bronzed Pocket Compass, 2 in., watch pattern, folding sights, graduated to 2 degrees on raised ring, needle with jeweled center and stop each \$

5447. do. do. do. 2½ in. “



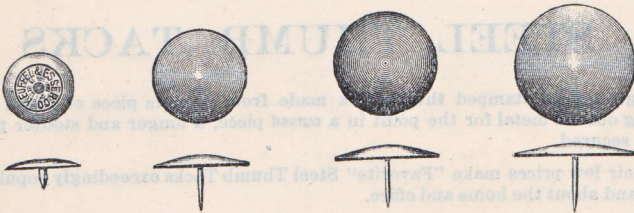
No. 5453.

5452. Pocket Compass, 2½ in., brass case, pull-off cover, folding sights, metal dial graduated to 2 degrees, edge-bar needle with jeweled center and stop each \$

5453. do. do. 2½ in. “



DRAWING PINS OR THUMB TACKS.



No. 2622.

2641.

2651.

N 2662.

FINE NICKEL SILVER TACKS.

TOOL STEEL POINTS, SCREWED AND RIVETED. ONE DOZEN ON A CARD.
ROUND HEAD.

2622.	¹ / ₁₆ in.	diam.	doz.	\$
2624.	¹ / ₈ "	"	"	"
2626.	¹ / ₄ "	"	"	"

NICKEL SILVER TACKS.

HIGHLY FINISHED. STEEL POINTS SWAGED.
ROUND HEAD.

One Gross per Box.				One Dozen on a Card.			
2640.	¹ / ₁₆ in.	diam.	gross \$	2643.	¹ / ₁₆ in.	diam.	gr. \$ doz. \$
2641.	¹ / ₈ "	"	"	2644.	¹ / ₈ "	"	"
N2642.	¹ / ₄ "	"	"	2645.	¹ / ₂ "	"	"

BRASS TACKS.

HIGHLY FINISHED. STEEL POINTS SWAGED.
ROUND HEAD.

One Gross per Box.				One Dozen on a Card.			
2650.	¹ / ₁₆ in.	diam.	gross \$	2653.	¹ / ₁₆ in.	diam.	gr. \$ doz. \$
2651.	¹ / ₈ "	"	"	N2654.	¹ / ₈ "	"	"
N2652.	¹ / ₄ "	"	"	2655.	¹ / ₂ "	"	"

STEEL TACKS.

NICKELPLATED. STEEL POINTS SWAGED.
ROUND HEAD.

One Gross per Box.				One Dozen on a Card.			
2660.	¹ / ₁₆ in.	diam.	gross \$	2663.	¹ / ₁₆ in.	diam.	gr. \$ doz. \$
2661.	¹ / ₈ "	"	"	N2664.	¹ / ₈ "	"	"
N2662.	¹ / ₄ "	"	"	2665.	¹ / ₂ "	"	"

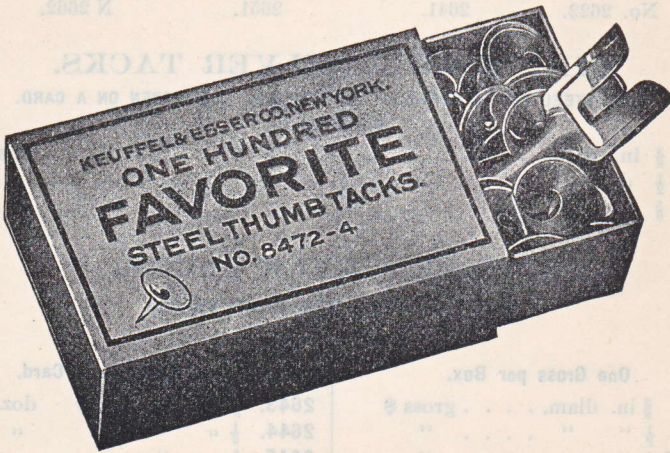
FOR STAMPED STEEL TACKS, SEE PAGES 71 and 72.

KEUFFEL & ESSER CO., NEW YORK

"FAVORITE" STEEL THUMB TACKS

A good steel stamped thumb tack made from a single piece of tough steel. By stamping out the metal for the point in a curved piece, a longer and stouter point than usual is secured.

Their low prices make "Favorite" Steel Thumb Tacks exceedingly popular both in schools and about the home and office.



8472-1



8472-2



8472-3



8472-4

100 Tacks in a wooden box, with Lifter; 10 boxes (1,000 tacks) are packed in a paper box. Made in four sizes, as follows:

8472-1.	"Favorite" Steel Tacks,	$\frac{5}{16}$ in. diam.	Per thousand \$
8472-2.	" " " "	$\frac{3}{8}$ " " " "	"
8472-3.	" " " "	$\frac{7}{16}$ " " " "	"
8472-4.	" " " "	$\frac{9}{16}$ " " " "	"
8473-2.	" " " "	$\frac{3}{8}$ " " " "	" 2 dozen in
	a tin box		per carton of 100 boxes.



STAMPED STEEL TACKS.



No. 2677.



2678.



2679.

PLAIN.

One Box of 100.

2677.	$\frac{3}{16}$	in. diam.	box \$
2678.	$\frac{7}{16}$	" "	"
2679.	$\frac{9}{16}$	" "	"
2677 $\frac{1}{2}$.	$\frac{3}{16}$	" "	box of 12 each

One Dozen on a Card.

2677C.	$\frac{3}{16}$	in. diam.	doz. \$
2678C.	$\frac{7}{16}$	" "	"
2679C.	$\frac{9}{16}$	" "	"

NICKELPLATED.

One Box of 100.

2677N.	$\frac{3}{16}$	in. diam.	box \$
2678N.	$\frac{7}{16}$	" "	"
2679N.	$\frac{9}{16}$	" "	"

One Dozen on a Card.

2677NC.	$\frac{3}{16}$	in. diam.	doz. \$
2678NC.	$\frac{7}{16}$	" "	"
2679NC.	$\frac{9}{16}$	" "	"

These Stamped Steel Tacks are made of one piece of tough, hard steel (especially made for this purpose) and are of the very best quality. They have needle finished points, so that they make an excellent substitute for the regular thumb tacks whenever a lower priced article is desired.

IDEAL THUMB TACKS.



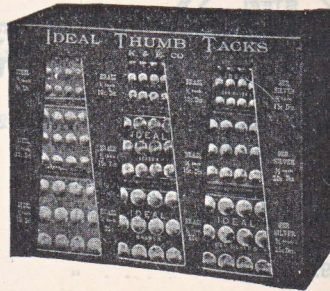
Ideal Thumb Tacks meet the demand for a good, serviceable, and well finished tack at a low price. Their steel points are strong and cannot push through the head. The heads are rounded (not beveled) and curve to a thin edge. They are put up either on blocks of one dozen, 12 blocks in a box, or loose in boxes of one gross.



DISPLAY CASES FOR IDEAL TACKS.



No. 8489.



No. 8490.

These display cases for Ideal Tacks are practically and neatly made and finished in dark green. They are so arranged that each compartment will hold a gross box of tacks. In this way one card of each kind of tacks is displayed, and the rest of the cards are easily accessible if the cover be removed from the box before it is inserted in the case. On the front of the case, the size, material, and price of each style of tacks are printed next to the opening in which it is displayed.

The display case is made in two sizes :

- 8489.** Case containing 6 gross: one gross each Nos. 8478, $\frac{3}{8}$ ", $\frac{1}{2}$ "; 8484, $\frac{3}{8}$ ", $\frac{1}{2}$ "; 8488, $\frac{3}{8}$ ", $\frac{1}{2}$ " \$
- 8490.** Case containing 9 gross: one gross each Nos. 8478, $\frac{3}{8}$ " $\frac{1}{2}$ ", $\frac{5}{8}$ "; 8484, $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ "; 8488, $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ " \$

STEEL.

		$\frac{3}{8}$ in.	$\frac{1}{2}$ in.	$\frac{5}{8}$ in.
Steel Tacks, loose, 1 gross in a box, gross		8476-3	8476-4	8476-5
do, hundred in box, hundred		8477-3	8477-4	8477-5
do, on blocks of 1 dozen, gross		8478-3	8478-4	8478-5

BRASS.

		$\frac{3}{8}$ in.	$\frac{1}{2}$ in.	$\frac{5}{8}$ in.
Brass Tacks, loose, 1 gross in a box, gross		8480-3	8480-4	8480-5
do, hundred in box, hundred		8481-3	8481-4	8481-5
do, on blocks of 1 dozen, gross		8484-3	8484-4	8484-5

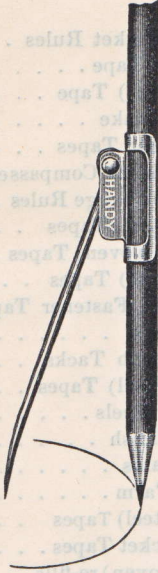
NICKEL SILVER.

		$\frac{3}{8}$ in.	$\frac{1}{2}$ in.	$\frac{5}{8}$ in.
Nick. Sil. Tacks, loose, 1 gross in a box, gross		8486-3	8486-4	8486-5
do, hundred in box, hundred		8487-3	8487-4	8487-5
do, on blocks of 1 dozen, gross		8488-3	8488-4	8488-5

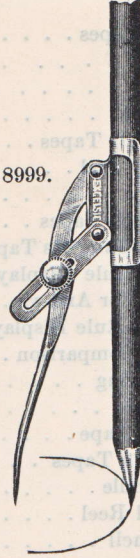


HANDY AND EXCELSIOR PENCIL COMPASSES.

No. 8997



No. 8999.



8997. HANDY Pencil-Compasses, $3\frac{3}{4}$ in., 50 in a box each \$

The Handy Pencil Compass, while very simple in construction, is strong and durable. The leg, of solid steel, strongly pivoted to the pencil holder, is readily set to the desired radius, and steadily maintains its position after setting. Since the Compass is so simply constructed, it is not likely to get out of order.

Circles of diameters between $\frac{3}{8}$ in. and 9 in. may be drawn with it. It fits all ordinary pencils.

Suitable for work in elementary schools; and a handy pocket tool for the mechanic.

8999. EXCELSIOR Pencil Compasses, $3\frac{3}{8}$ in. leg, one doz. in a box, . each \$

9000. EXCELSIOR Pencil Compasses, $3\frac{3}{8}$ in. leg, one dozen, with one pencil, on a card. card \$

The Excelsior Pencil Compass has a solid steel leg and an arm with clamp screw, making it very strong and steady. The clamp-screw is secured against coming out. Circles up to $6\frac{1}{4}$ in. in dia. may be drawn with it. It fits all ordinary pencils.

They are used in a great many schools, for elementary instruction; and are handy pocket tools for the mechanic.

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